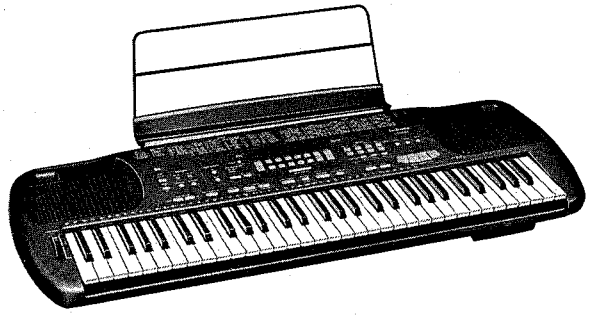
ORDER NO. EMID951587
A5

Service Manual

PCM Keyboard

SX-KN501

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA), (EP), (EK), (XL), (XR), (XS), (XD), (XT), (X), (XP)



AREAS

(M): U.S.A.
(MC): Canada
(XM): Mexico
(EN): Norway, Sweden, Denmark, Finland
(EH): Holland, Belgium
(EF): France, Italy
(EZ): Germany
(EW): Switzerland
(EA): Austria
(EP): Spain, Portugal, Greece, Singapore
(EK): the United Kingdom
(XL): New Zealand
(XR): Australia
(XS): Malaysia, South Africa
(XD): Saudi Arabia, Hong Kong
(XT): Taiwan
(X): Thailand, Indonesia, Iran, U.A.E., Panama, Argentina, Peru, Brasil
(XP): Philippines

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

■ Specifications

KEYBOARD	61 KEYS (WITH INITIAL TOUCH)
SOUND GENERATOR	PCM
MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY	32 NOTES
SOUNDS	129 SOUNDS
EFFECTS	SUSTAIN, CHORUS, REVERB, PITCH BEND
PART SELECT	RIGHT 1, RIGHT 2, LEFT
TRANSPOSE	G-C-F#
RHYTHM	100 RHYTHMS + 100 VARIATIONS
CONTROLS	MAIN VOLUME, BALANCE, CONDUCTOR, START/STOP, INTRO & ENDING, FILL IN 1, FILL IN 2, COUNT INTRO , SYNCHRO, TEMPO, SPLIT POINT
MANUAL SEQUENCE PADS	4PADS × 6 PRESET PHRASES, MANUAL PERC, SELECT, STOP
AUTO PLAY CHORD	ONE FINGER, FINGERED, SOUND ARRANGER
ONE TOUCH PLAY	○
TECHNI-CHORD	○
PANEL MEMORY	10 BANKS (0-9)
SEQUENCER	2 TRACKS STORAGE CAPACITY : APPROX. 2800 NOTES INPUT MODES : REALTIME RECORD, STEP RECORD (CHORD) FUNCTION: SEQUENCER CLEAR

Technics

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8668

MODE SET	INITIAL, SUB BALANCE, PART SETTING, KEYBOARD SET UP, KEY SCALING, MIDI SETTING, GM MODE SET
DISPLAY	LED (3 DIGITS) EXIT
DEMO	O
TERMINALS	DC IN 12 V, PHONES/LINE OUT, FOOT SW, MIDI (IN, OUT)
OUTPUT	2 W × 2 (WITH BATTERIES), 5 W × 2 (WITH SY-AD6/AD6B/AD9 AC ADAPTOR)
SPEAKERS	12 cm × 2
POWER REQUIREMENT	BATTERIES: DC 9V (USING R20/LR20 ("D" SIZE, UM-1] BATTERIES × 6)
	AC: WITH SY-AD6 AC ADAPTOR — AC 120/220/230/240 V 50/60 Hz AC 120 V 60 Hz (CANADA)
	AC: WITH SY-AD6B AC ADAPTOR — AC 230 V 50/60 Hz (EUROPE EXCEPT FOR UNITED KINGDOM)
	AC: WITH SY-AD9 — AC 120 V 60 Hz (USA)
DIMENSIONS (W × H × D)	99.8 cm × 11.7 cm × 34.6 cm (39-9/32" × 4-19/32" × 13-5/8") WITHOUT MUSIC STAND, BATTERIES
NET WEIGHT	5.8 Kg (12.8 lbs.) WITHOUT MUSIC STAND, BATTERIES
ACCESSORIES	MUSIC STAND

*Specification are subject to change without notice for further improvement.

WARNING

To prevent the risk of fire, smoke, or electrical shock and to ensure safe operation, please be sure to follow the safety guidelines below.

1. At places where special caution is required, the necessary safety precautions are clearly labeled or printed, for example, on the cabinet, or on the part concerned. Please follow these safety precautions, and also those listed in the Owner's Manual.
2. Parts which have a ⚠ mark in the circuit diagram or in the parts list are essential for safety. When replacing these parts, be sure to use only the specified parts.
3. Use the specified types for internal wiring (double-insulated wiring, etc.).
4. Do not let the wiring come into contact with heat-emitting devices (fuse resistor, radiator plate, etc.).
5. When replacing the wiring, make sure that it is not in contact with the unfinished or rough edge of a part.

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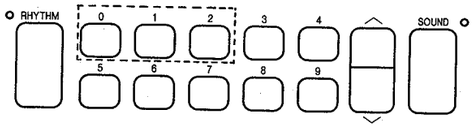
INITIAL SETTING

■ The initial setting function is used to return to the original factory settings, and to reset the customer settings and misoperations.

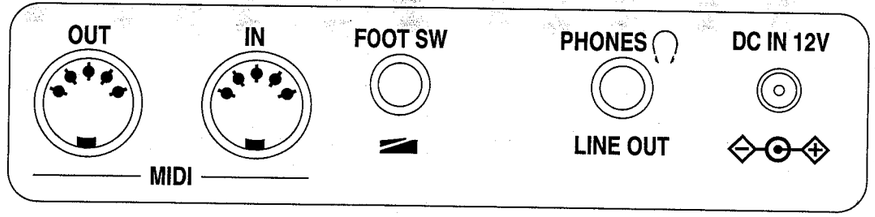
1. Press the **PLAY** button to turn off the instrument.

2. While pressing the **0**,**1** and **2** buttons on the **SOUND/RHYTHM** number pad at the same time, turn the **PLAY** button on again.



NOTE:
All stored data in the **SEQUENCER** and other setting are initialized with this operation.

TERMINALS



(on the rear panel)

MIDI (Musical Instrument Digital Interface)
MIDI is the standard specification that enables connection to equipment such as synthesizers and personal computers. Data transmission and reception are possible between the keyboard and other instruments provided with MIDI terminals.

IN : The terminal that receives data from external equipment.
OUT : The terminal that transmits data from this instrument to external equipment.

• Use a 5-pin DIN cord (less than 15 m long) for these connections.

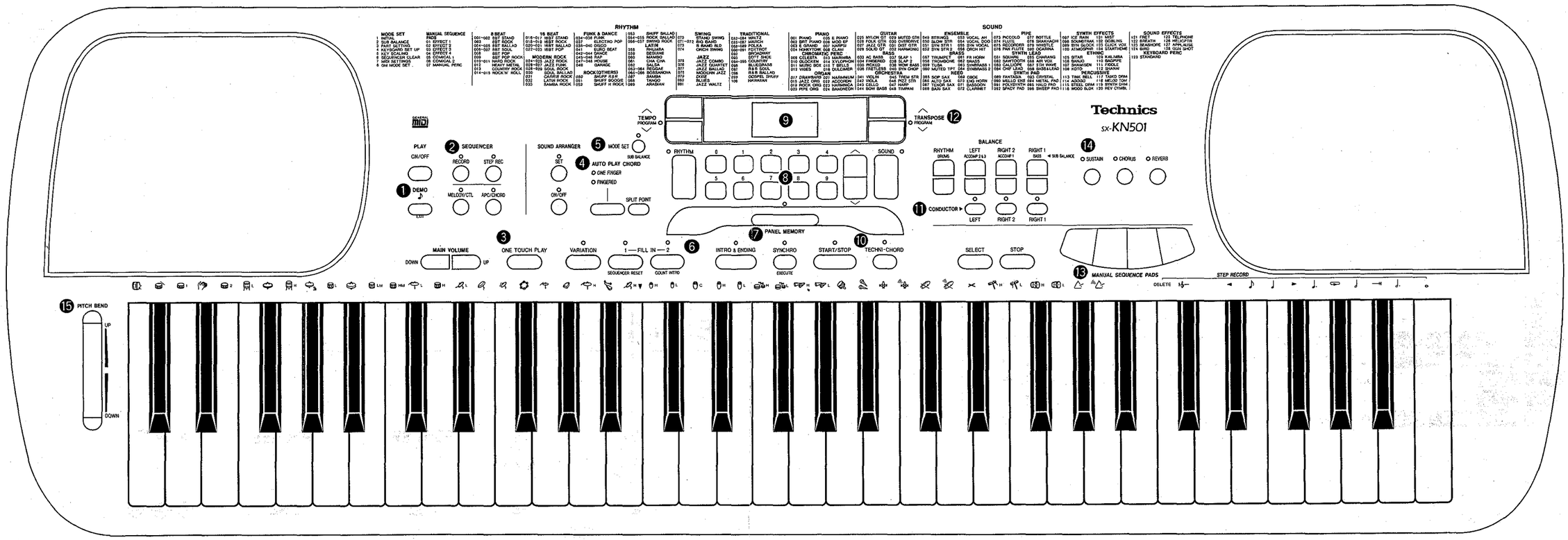
FOOT SW
The optional SZ-P1 Foot Switch can be connected to this terminal to control various functions.

PHONES (🎧) /LINE OUT (Output level 1.5 Vrms 16Ω)
Headphones, a keyboard amplifier, or stereo equipment can be connected to this terminal. When another apparatus is connected to this terminal, the speaker system is automatically switched off, and aound is heard only through the connected device.

DC IN (12V)
Standard household current can be used by connecting the Technics SY-AD6/AD6B/AD9 AC adaptor between a wall outlet and the DC IN 12V terminal on the instrument.

• Use of a different AC adaptor may damage this instrument.

ARRANGEMENT OF CONTROL PANEL



❶ DEMO
Pre-recorded performances are used to demonstrate the individual appeal of the rhythms, sounds and other features.

❷ SEQUENCER
With this feature you can separately play and record the parts for an entire song. Then have the whole ensemble performance played back automatically.

❸ ONE TOUCH PLAY
Select a rhythm and press the **ONE TOUCH PLAY** button until the panel settings change. The sounds and effects perfect for the selected rhythm are automatically set in seconds.

❹ AUTO PLAY CHORD
This feature is activated when the **ONE FINGER** or **FINGERED** button is turned on. An automatic accompaniment appropriate for the selected rhythm is produced when you play a chord. The volume for each part of the **AUTO PLAY CHORD** (**DRUMS, BASS, ACCOMP 1, 2, 3**) is adjusted with the **BALANCE** buttons.

❺ MODE SET
The settable functions in this mode include initialization, part setting, and setting related to MIDI operation etc..

❻ RHYTHM control
Rhythm controls are **START/STOP**, **SYNCHRO**, **INTRO & ENDING**, **VARIATION**, **COUNT INTRO** and **FILL IN 1** and **2**. The volume is adjusted with the **DRUMS** balance buttons.

❼ PANEL MEMORY
Set up the sounds and effects, and then store them in 10 memories (0-9) buttons for instant recall as you play. You can expand the range of storable settings to include the rhythm selection, tempo setting and more.

❽ SOUND/RHYTHM select
Select sounds and rhythms.

❾ DISPLAY
Displays performance information, function settings and other messages.

❿ TECHNI-CHORD
Chord notes played on the left section of the keyboard are added to melody notes played on the right section.

⓫ CONDUCTOR
These buttons allow you to assign a different sound to each part, and then assign the desired part to the entire keyboard, assign a different part to each section of the keyboard, or mix parts. When the keyboard is divided into sections, change the dividing point with the **SPLIT POINT** button.

⓬ TRANSPOSE
C is the standard setting, but you can raise or lower the key of the entire instrument with these two buttons.

⓭ MANUAL SEQUENCE PADS
Add various phrases to your performance with the pad buttons.

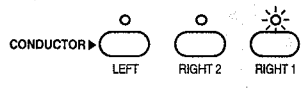
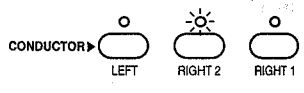
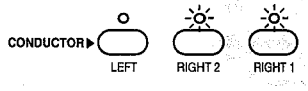
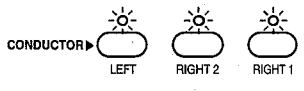
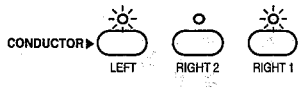
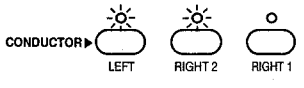
⓮ Effects
Turn the **REVERB** button on to add reverberation to the sound. **CHORUS** gives the sound a thickness and diffusion. When **SUSTAIN** is on, the musical tones fade gradually after the keys are released.

⓯ PITCH BEND
This wheel is moved up or down with your hand to create a continuous change in pitch. The wheel returns to the center position automatically when it is released.

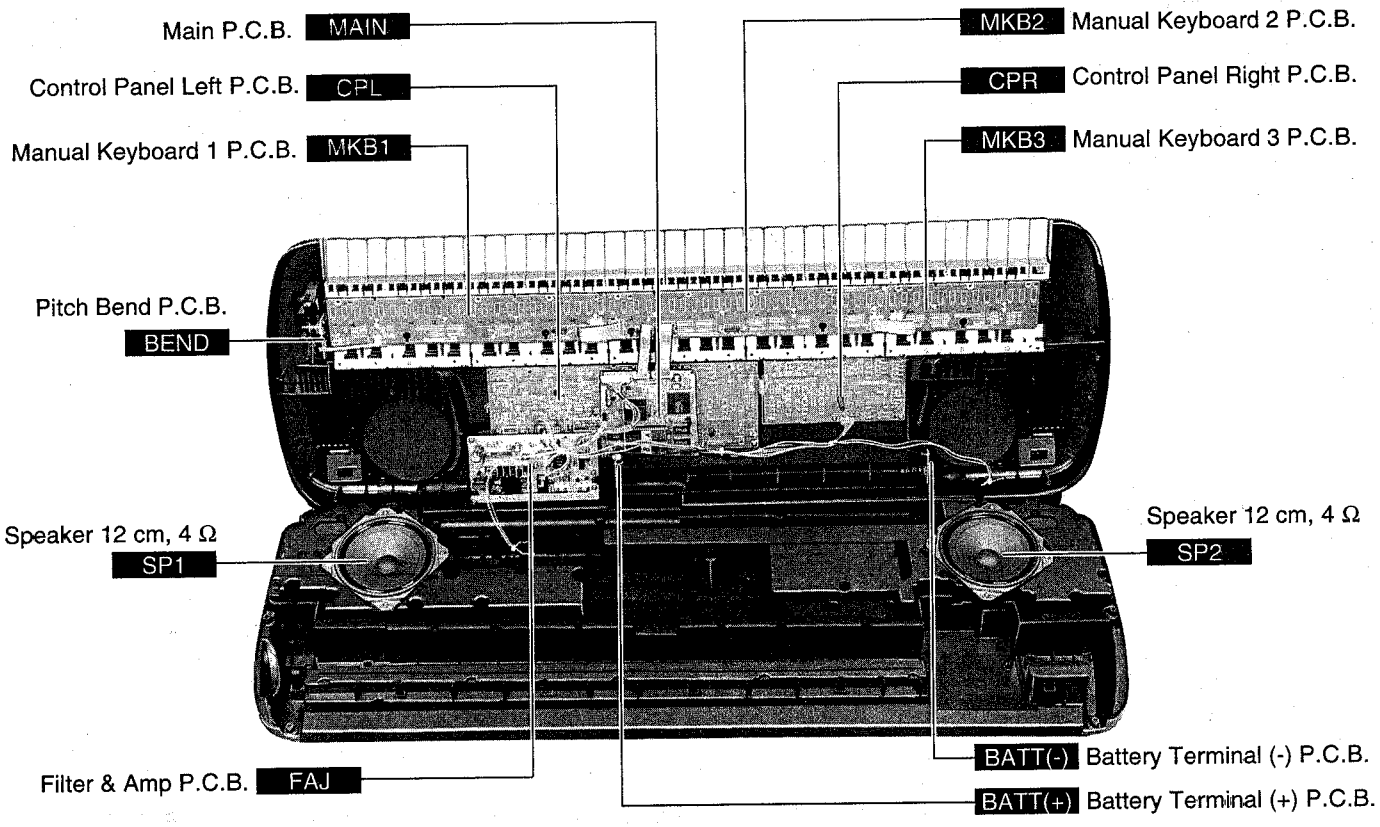
CONDUCTOR SETTINGS

The **CONDUCTOR** buttons are used to assign sounds to the keyboard in many different ways. For example, you can assign two sounds to the entire keyboard so that playing one key will produce two sounds. You can even split the keyboard into right and left sections (**SPLIT**), and assign a different sound to each section.

CONDUCTOR

CONDUCTOR settings	How sounds are assigned to the keyboard
	All keys produce the **RIGHT 1** sounds. **RIGHT 1**
	All keys produce the **RIGHT 2** sounds. **RIGHT 2**
	All the keys play both **RIGHT 1** and **RIGHT 2** sounds at the same time. **RIGHT 1 + RIGHT 2**
	The left keys produce the **LEFT** sound and the right keys produce the **RIGHT 1** sound and the **RIGHT 2** sound (SPLIT). **LEFT** | **RIGHT 1 + RIGHT 2**
	The left keys produce the **LEFT** sound and the right keys produce the **RIGHT 1** sound (SPLIT). **LEFT** | **RIGHT 1**
	The left keys produce the **LEFT** sound and the right keys produce the **RIGHT 2** sound (SPLIT). **LEFT** | **RIGHT 2**

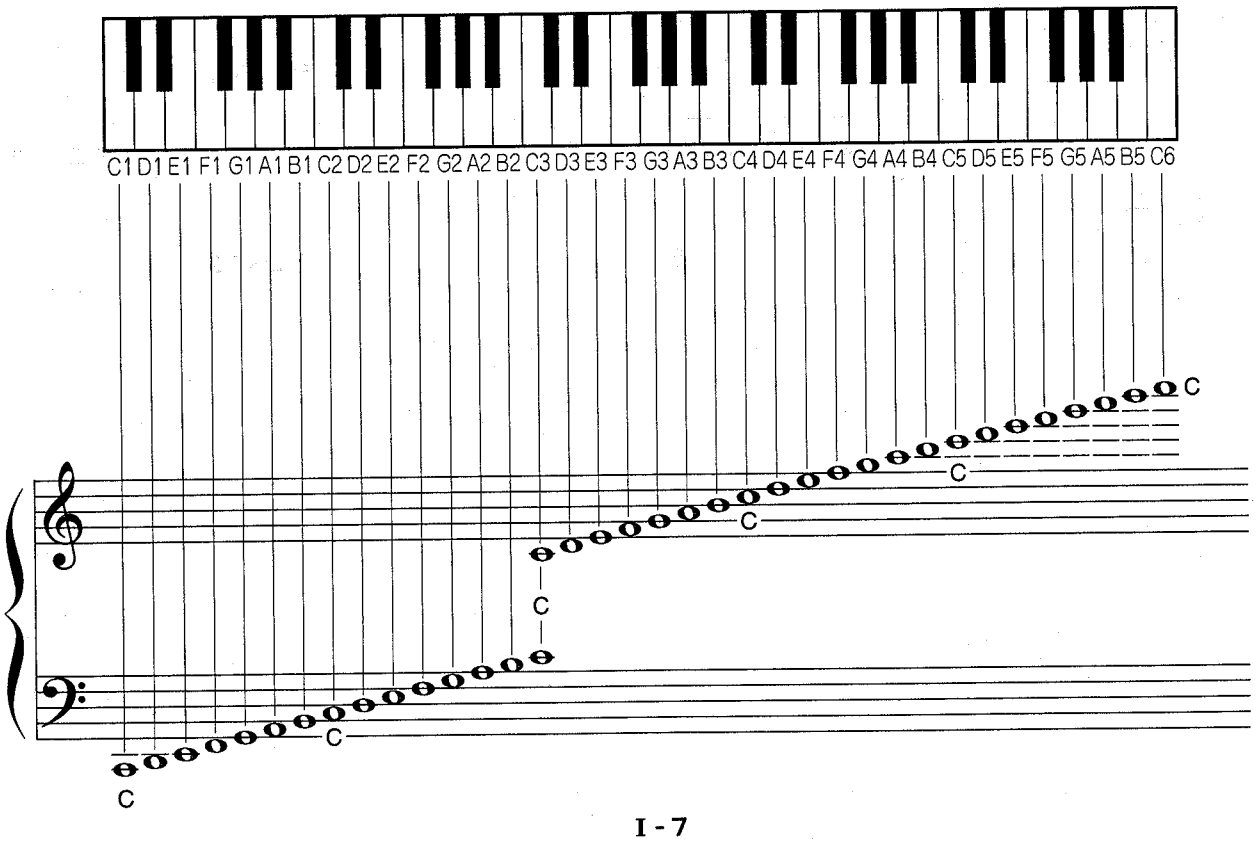
PARTS LOCATION


Main P.C.B. MAIN
Control Panel Left P.C.B. CPL
Manual Keyboard 1 P.C.B. MKB1
Pitch Bend P.C.B. BEND
Speaker 12 cm, 4 Ω SP1
Filter & Amp P.C.B. FAJ
MKB2 Manual Keyboard 2 P.C.B.
CPR Control Panel Right P.C.B.
MKB3 Manual Keyboard 3 P.C.B.
Speaker 12 cm, 4 Ω SP2
BATT(-) Battery Terminal (-) P.C.B.
BATT(+) Battery Terminal (+) P.C.B.

[Photo-1]

KEYBOARD RANGES

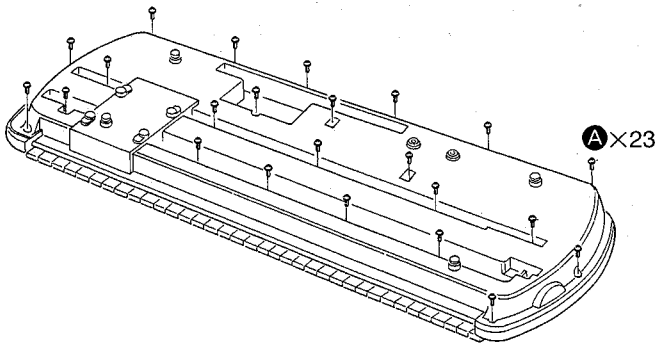
This keyboard features Touch Response, by which you control the volume by playing the keys harder or softer.



DISASSEMBLY INSTRUCTIONS

1 Opening the cabinet

1. Turn the keyboard cabinet upside down as shown in Fig. 1, and remove the bottom screws (Ⓐ 23 pcs.).
2. Place the keyboard bottomside down, and open the top cabinet .



[Fig. 1]

2 Removing the MAIN, FAJ, CPL and CPR printed circuit boards

• Open the cabinet (see step 1).

MAIN P.C.B.

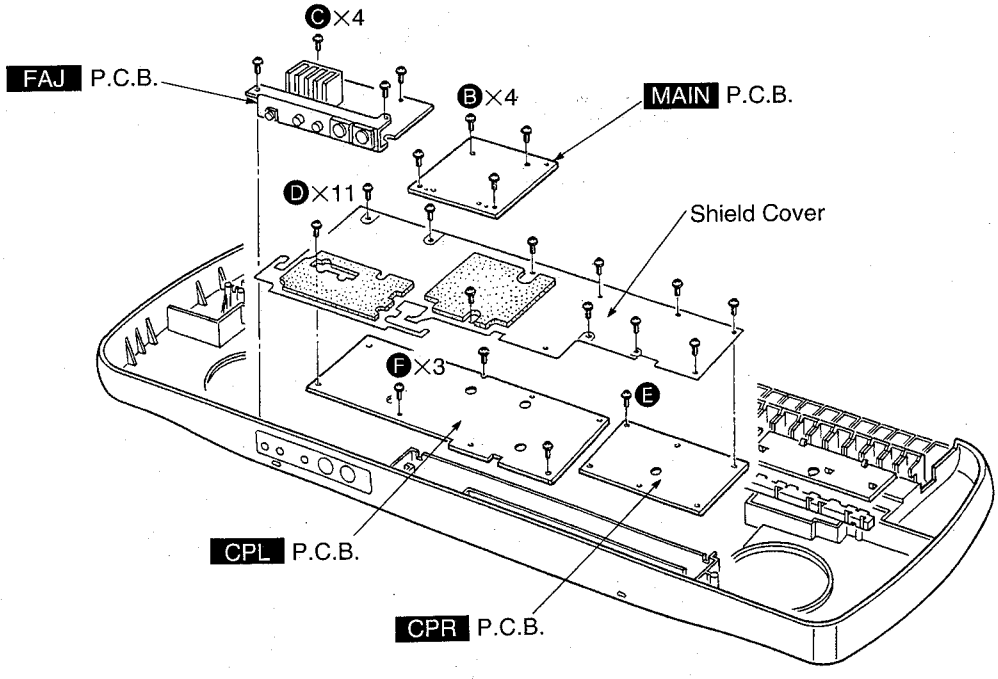
• Remove the MAIN P.C.B. mounting screws (Ⓑ 4 pcs.).

FAJ P.C.B.

• Remove the FAJ P.C.B. mounting screws (Ⓒ 4 pcs.).

CPL, CPR P.C.B.

1. Remove the MAIN and FAJ P.C.B..
2. Remove the shield cover mounting screws (Ⓓ 11 pcs.).
3. Remove the CPL and CPR P.C.B. mounting screws (Ⓔ 1pc. and Ⓕ 3pcs.).



[Fig. 2]

3 Removing the BEND, MKB1, MKB2, MKB3, BATT(+) and BATT(−) printed circuit boards

- Open the cabinet (see step 1).

BEND P.C.B. Ass'y

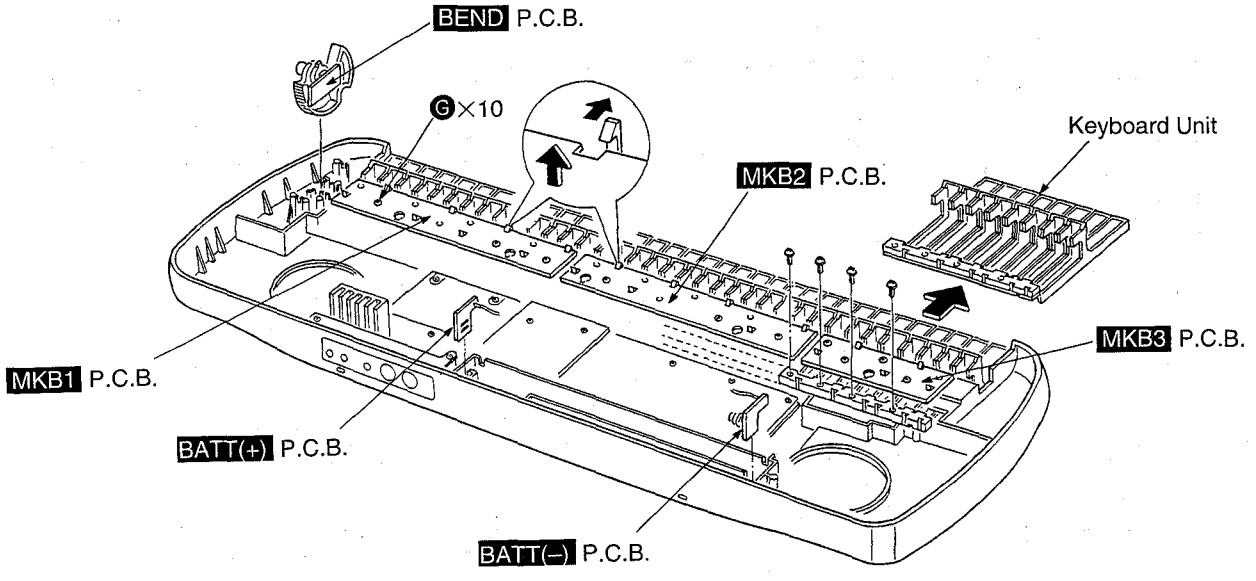
- Pull out the BEND P.C.B. ass'y from the cabinet.

MKB1, MKB2, MKB3 P.C.B.

- Remove the MKB1, MKB2 and MKB3 P.C.B. mounting screws (G 10pcs.).

BATT(+), BATT(−) P.C.B.

- Pull out the BATT(+) and BATT(−) P.C.B. from the cabinet.



[Fig. 3]

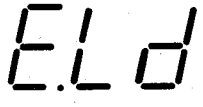
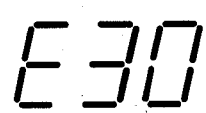
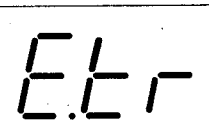
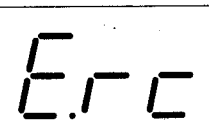
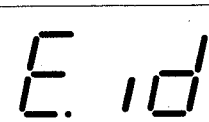
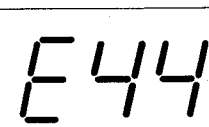
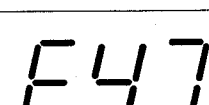
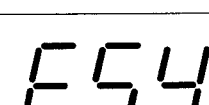
SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLE

The following changes in performance may occur in the keyboard but do not indicate trouble.

	Phenomenon	Remedy
Sounds and effects	The buttons, keys, etc. malfunction.	• Turn off the **PLAY** button once, then turn it on again. If this procedure is not successful, turn off the **PLAY** button once. Then, while pressing the three lower number buttons on the **SOUND/RHYTHM** select number pad (0,1 and 2) at the same time, turn the PLAY button on again. (Note that, in this case, all programmable settings, functions and memories return to their factory-preset status.) • If you cannot turn off the **PLAY** button, disconnect the AC adaptor or remove the batteries once.
	No sound is produced when the keys are pressed.	• The **MAIN VOLUME** is at the minimum setting. Adjust the volume with the **MAIN VOLUME** control. • The volumes for the selected parts are set to the minimum levels. Use the balance buttons to set the volumes of the relevant parts to appropriate levels. • The local control for a part performed on the keyboard is set to OFF. Set the LOCAL CONTROL to ON.
	When using batteries, the volume level becomes low or the sound is distorted.	• The batteries are low. Replace the batteries as soon as possible.
	The type of effect does not alternate when the **CHORUS/FLANGER** button is pressed.	• Follow the procedure to select the type of effect.
	Some sounds cannot be selected.	• When the GENERAL MIDI status is set to on, the sounds which can be selected and operations which can be executed are limited. Turn the GENERAL MIDI status off to return the instrument to its normal operation.
Rhythm	The rhythm does not start.	• The **DRUMS** volume is set to the minimum level. Use the **BALANCE** buttons to set the **DRUMS** volume to an appropriate level. • In the **SOUND/RHYTHM** select section, a rhythm in **MEMORY** with no stored pattern was selected. Select a different rhythm. • The MIDI CLOCK is set to MIDI. Set the MIDI CLOCK to INT. • The rhythm does not work when the GENERAL MIDI mode is set to ON. Turn the GENERAL MIDI status off to return the instrument to its normal operation.
AUTO PLAY CHORD	No sound is produced for the automatic accompaniment.	• In the **SOUND/RHYTHM** select section, a rhythm in **MEMORY** with no stored pattern was selected. Select a different rhythm.
	No sound is produced for the automatic accompaniment, or only the sounds of some parts are produced.	• An **ACCOMP** part does not sound if its corresponding volume is set to the minimum level. Use the respective **BALANCE** buttons to set the **ACCOMP 1**, **2** and **3** volumes to appropriate levels.

	Phenomenon	Remedy
SEQUENCER	Storage is not possible.	• The remaining memory capacity of the **SEQUENCER** is 0. Follow the SEQUENCER CLEAR procedure to erase the memory.
	Multi-track storage is not possible.	• The playback track has been selected, but the **START/STOP** button has not been pressed. A flashing track indicator shows the track which is ready for recording, and a lit track indicator shows a track which is ready for playback. To record one track while listening to another (playback) track, press the **START/STOP** button to begin playback.
COMPOSER	Storage is not possible.	• The remaining memory capacity of the **COMPOSER** is 0.
	Setting the number of measures is not possible.	• If you wish to change the measure data, first follow the procedure to clear the memory.
	The playback timing of the rhythm pattern is different from the timing with which it was recorded.	• The quantize function was on when the pattern was recorded and the timing was automatically corrected. Set the quantize level to a smaller note unit or to OFF when recording.
Other	Noise from a radio or TV can be heard.	• This sometimes occurs when electrical equipment such as a radio or TV is used near the instrument. Try moving such electrical equipment further away from the instrument. • The sound may be coming from a nearby broadcast station or amateur radio station. If the sound is bothersome, consult your dealer or servicenter.
	The cabinet becomes warm during use.	• This instrument has a built-in amplifier section that heats the cabinet to some degree. This is not an indication of trouble.

ERROR DISPLAY

Error display	Reason
	**SONG LOAD** failure.
	The number of the **SONG MEMORY** that you tried to load is empty.
	Batteries exhausted.
	There is an error in the **SEQUENCER** data. The performance cannot be played back.
	The **SEQUENCER, COMPOSER** or **MANUAL SEQUENCE PADS** memory is full. No more data can be stored.
	You attempted to change the number of measures or the time signature of the rhythm without first clearing the **COMPOSER** memory.
	An error has occurred during **MIDI BULK DUMP** transmission.
	An error has occurred during **MIDI BULK DUMP** reception.
	The identification (ID) code of the **SYSTEM EXCLUSIVE** data received by this instrument is for a different product.
	You attempted to edit a **KEYBOARD PERC** sound.
	A rhythm other than a preset rhythm was selected.
	**MANUAL SEQUENCE PADS**, Preset numbers other than No.11 do not allow recording.

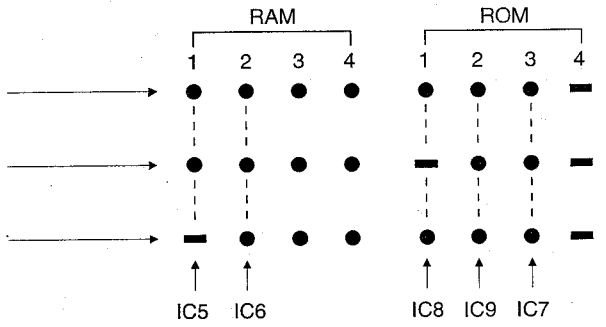
ABOUT THE SELF-DIAGNOSTIC FUNCTION

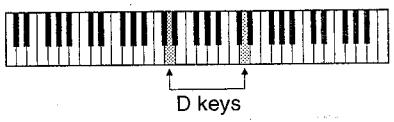
This model has some self-diagnostic capabilities. When set to the self-diagnostic mode, operation of various components can be verified by following the procedures in the chart below.

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td>1</td><td>MAIN</td><td>RAM (IC5, 6), ROM (IC7-9) check</td><td>1. Connect the CHECKING DEVICE (refer to page I-14) to CN 1 on the MAIN P.C.B., and turn on the CHECKING DEVICE switch.
2. Turn on the play switch.</td></tr>
<tr><td colspan="4">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 8 times. The first 4 flashes are for the RAM check, and the latter 4 flashes are for the ROM check. The order of the LED flashes correspond to the respective IC numbers as shown below. If an IC is defective, the corresponding flash time is longer.

Examples
1. RAM OK, ROM OK
2. RAM OK, ROM (IC8) defective
3. RAM (IC5) defective, ROM OK

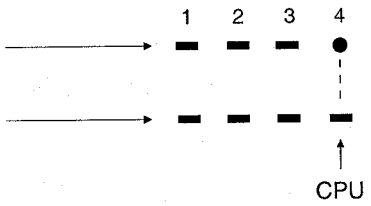
NOTE : ● indicates short flash time
▬ indicates long flash time

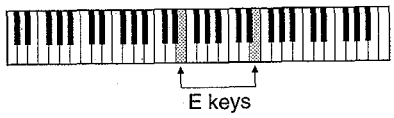
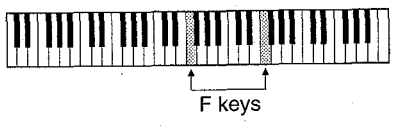
 
</td></tr>
<tr><td>2</td><td>CPL</td><td>Control panel CPU check</td><td>1. Connect the CHECKING DEVICE to CN 1 on the MAIN P.C.B. (The Checking Device switch should be off).
2. Press and hold the two D keys shown below, and then turn on the play switch.

 
</td></tr>
<tr><td colspan="4">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 4 times. The order of the LED flashes corresponds to the CPU (IC) on the respective P.C.B.s as shown below. If an IC is defective, the corresponding flash time is longer.

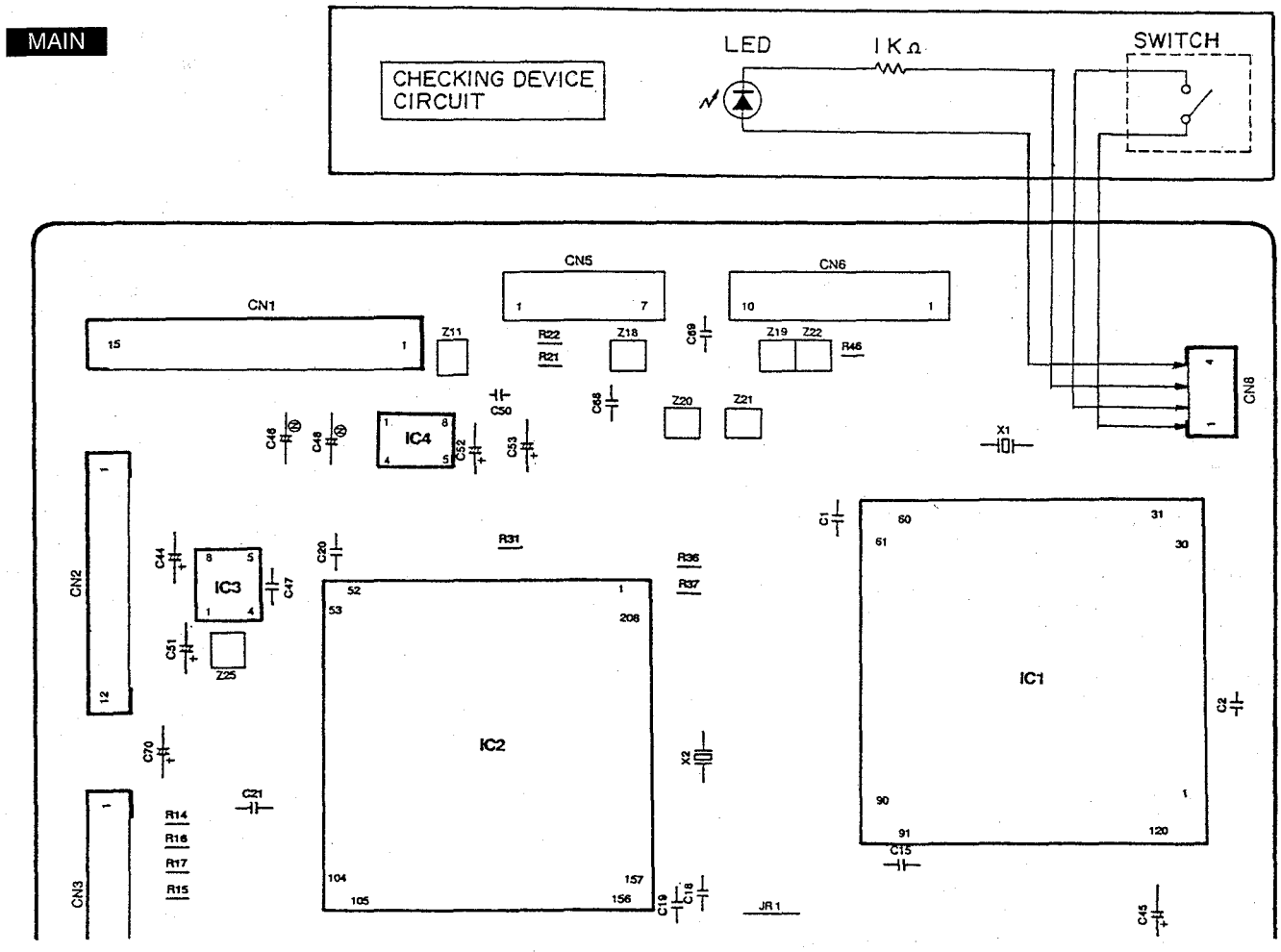
1. OK
2. CPU defective

NOTE : ● indicates short flash time
▬ indicates long flash time

 
</td></tr>
</table>

No.	PCB	TEST MODE	Procedure
3	MAIN	Wave ROM check MAIN: IC11	Press and hold the two E keys shown below, and then turn on the play switch. 
		When set to the self-diagnostic mode, the Wave ROM outputs a sine wave. The Wave ROMs correspond to the keyboard keys. When a key is pressed, the sine wave sound is produced. If no sound is produced, or if the sound is distorted, the Wave ROM is defective.	
4	CPL CPR	LED & SW check	Press and hold the two F keys shown below, and then turn on the play switch. 
		All the LEDs turn off after lighting once. Confirm that all the LEDs light.	

■ Connection between serving CHECKING DEVICE and MAIN P.C.B.



MIDI IMPLEMENTATION CHART

Keyboard [SX-KN501] **(Transmitted)**

Function		RIGHT 1, 2, LEFT, PART 4 ~ 15	PART 16	ACMP 1	ACMP 2, 3	BASS	DRUMS	CHORD	CONTROL	Remarks
Basic	Default	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	memorized
Channel	Changed	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	
	Default	3	3	3	3	3	3	3	3	OMNI OFF, POLY MODE
Mode	Messages	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	
Note		0-119	0-119	0-119	0-119	0-119	0-119	0-119	–	Changes depending on the position of the transpose control, octave shift, and drums type.
Number	True voice	–	–	–	–	–	–	–	–	
Velocity	Note ON	○	○	○	○	○	○	○	–	
	Note OFF	×	×	×	×	×	×	×	–	
After	Key's	×	×	×	×	×	×	×	–	
Touch	Ch's	×	×	×	×	×	×	×	–	
Pitch Bend		○	×	○	○	○	×	○	×	
Control Change	0,32	○	○	○	○	○	○	○	×	bank select MSB, LSB
	1	○	×	○	○	○	×	○	×	modulation
	6,38	○	×	×	×	×	×	×	×	data entry MSB, LSB
	7	○	○	○	○	○	○	○	×	volume
	10	○	×	×	×	×	×	×	×	panpot
	11	○	○	×	×	×	×	×	○	expression
	64	○	○	○	○	○	○	×	×	sustain
	80	×	×	○	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	○	×	×	intro, fill in, ending
	91	○	○	○	○	○	○	○	○	reverb
	93	○	○	×	×	×	×	○	×	chorus
	100, 101	○	×	×	×	×	×	×	×	RPN LSB, MSB
	120	○	○	×	×	×	×	×	×	all sound off
	121	○	○	○	○	○	○	○	×	reset all controllers
Prog		○	○	○	○	○	○	○	×	Changes depending on program change mode and prog. cng to p. mem.
Change	True #	–	–	–	–	–	–	–	–	
System exclusive		○								
System common	Song Pos	○×*								only for SX-KN701
	Song Sel	○×* (0-3)								
	Tune	×								
System Real Time	Clock	○								start / stop, continue
	Commands	○×*								
AUX Messages	Local ON/OFF	×	×	×	×	×	×	×	–	
	All notes OFF	×	×	×	×	×	×	×	–	
	Active Sense	○								
	Reset	×								
Notes		○×* ..... Whether or not the data for each of these items is transmitted can be set.								

Mode 1: OMNI ON, POLY **Mode 2: OMNI ON, MONO** **○ : Yes**

Mode 3: OMNI OFF, POLY **Mode 4: OMNI OFF, MONO** **× : No**

Keyboard [SX-KN501] **(Recognized)**

Function		RIGHT 1, 2, LEFT, PART 4 ~ 15	PART 16	ACMP 1	ACMP 2, 3	BASS	DRUMS	CHORD	CONTROL	Remarks
Basic	Default	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	memorized
Channel	Changed	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	
	Default	3	3	3	3	3	3	3	3	OMNI OFF, POLY MODE
Mode	Messages	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	
Note		0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	Changes depending on the position of the transpose control, octave shift, and drums type.
Number	True voice	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	
Velocity	Note ON	○	○	○	○	○	○	○	–	
	Note OFF	×	×	×	×	×	×	×	–	
After	Key's	×	×	×	×	×	×	×	–	
Touch	Ch's	×	×	×	×	×	×	×	–	
Pitch Bend		○	×	○	○	○	×	○	×	
Control Change	0,32	○	○	○	○	○	○	○	×	bank select MSB, LSB
	1	○	×	○	○	○	×	○	×	modulation
	6,38	○	×	×	×	×	×	×	×	data entry MSB, LSB
	7	○	○	○	○	○	○	○	×	volume
	10	○	×	×	×	×	×	×	×	panpot
	11	○	○	×	×	×	×	×	○	expression
	64	○	○	○	○	○	○	×	×	sustain
	80	×	×	○	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	○	×	×	intro, fill in, ending
	91	○	○	○	○	○	○	○	○	reverb
	93	○	○	×	×	×	×	○	×	chorus
	100, 101	○	×	×	×	×	×	×	×	RPN LSB, MSB
	120	○	○	○	○	○	○	○	×	all sound off
	121	○	○	○	○	○	○	○	×	reset all controllers
Prog Change		○	○	○	○	○	○	○	×	Changes depending on program change mode and prog. cng to p. mem.
	True #	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	
System exclusive		○								
System common	Song Pos	○×*								only for SX-KN701
	Song Sel	○×* (0-3)								
	Tune	×								
System Real Time	Clock	○								start / stop, continue
	Commands	○×*								
AUX Messages	Local ON/OFF	×	×	×	×	×	×	×	–	
	All notes OFF	○	○	○	○	○	○	○	–	
	Active Sense	○								
	Reset	×								
Notes		○×* ····· Whether or not the data for each of these items is received can be set.								

Mode 1: OMNI ON, POLY **Mode 2: OMNI ON, MONO** **○ : Yes**

Mode 3: OMNI OFF, POLY **Mode 4: OMNI OFF, MONO** **× : No**

PRECAUTIONS BEFORE SERVICING

■ Precautions for measuring of the output waveforms.

1. The waveform was measured with a "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may differ somewhat due to the difference in the timing of triggering.
2. Since the 1/10 test probe is used, the indicated voltage value on the bottom part of each waveform photo is 1/10 of the actual value (e.g. 0.2 V/cm should be 2.0 V/cm).
3. To measure the waveforms, first set this unit to the self-diagnostic mode (refer to page I-14, No. 3). The Wave ROM output will then be output as a sine wave to facilitate the servicing check.

■ Important safety notice:

Components identified by a ⚠ mark have special characteristics impotant for safety.
When replacing any of these components, use only manufacture's specified parts.

■ Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4 WATT, ±5 % TOLERANCE unless otherwise designated in schematic diagrams.

(TABLE-1)

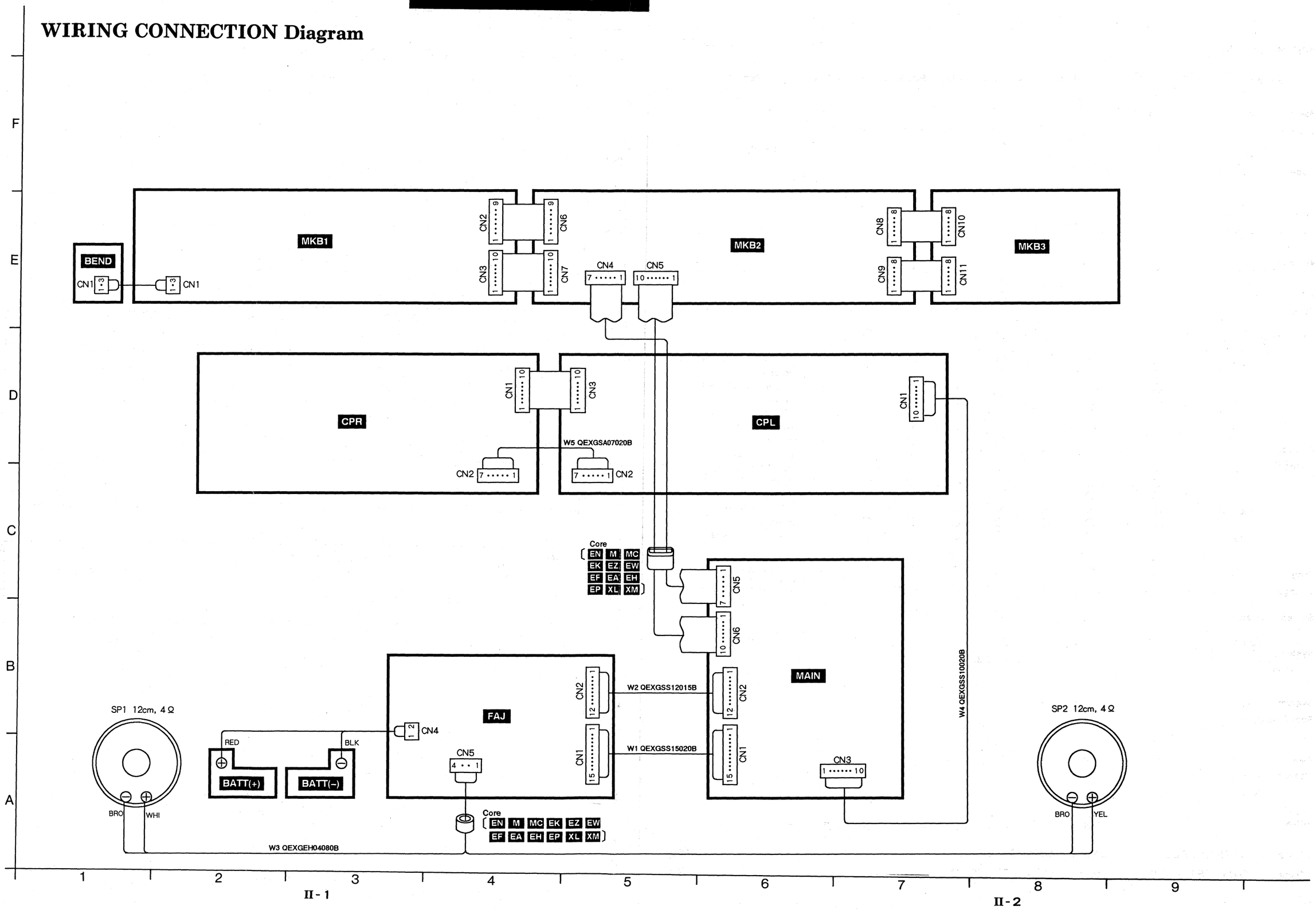
SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors "FLAME-PROOF" (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors "FLAME-PROOF" (ERX—type)
Ⓕ	Fixed Wire Wound Resistors "FLAME-PROOF" (ERF—type)	[F]	Fuse Type Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors "FLAME-PROOF" (ERG—type)	[F]	Fuse Type Fixed Carbon File Resistors "FLAME-PROOF" (ERD2FC—type)
Ⓖ	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10 % Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capapcitors. (ECEA-type, ±20 % Tolerance)

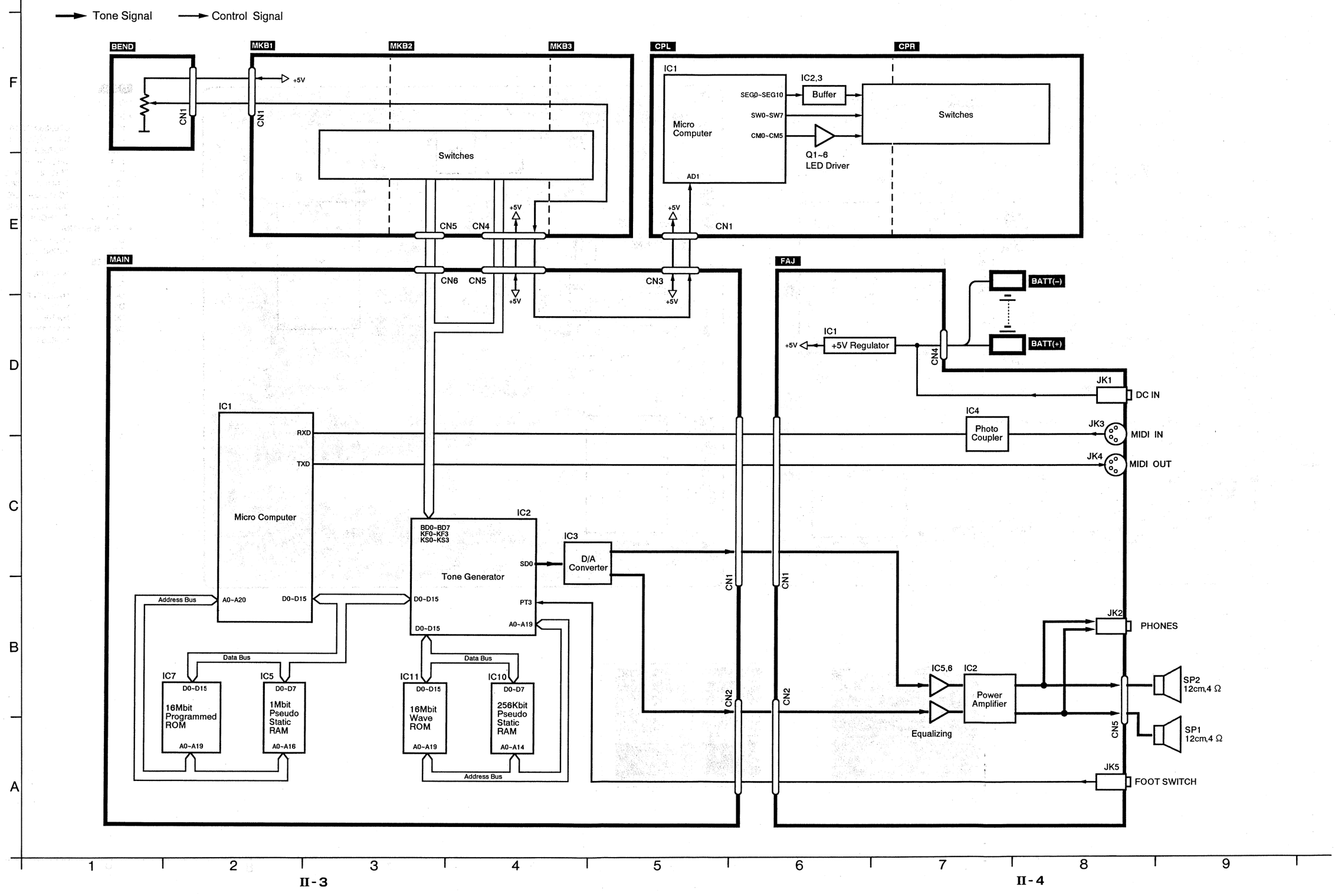
(TABLE-2)

SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarized Electrolytic Capacitors	ECEA_KN_type
Ⓨ	Non-Polarized Electrolytic (for Network system)	ECEA_Y_type
Ⓣ	Tantalum Solid Electrolytic Capacitors	ECS_type
TF	Metalized Plastic Film Capacitors (TF Series)	ECQV_type
○	Temperature Compensating Ceramic Capacitors	ECC_type
	High-Dielectric Constant Ceramic Capacitors	ECK_type ECR_type
	Axial Lead Ceramic Capacitors	ECB_type
	Metalized Polyester Film Capacitors for Across the Line	ECQ_EW_type
	Aluminum Electrolytic Capacitors for Smoothing Circuit	ECES_type
	Multilayer Ceramic Chip Capacitors	ECUV_type

WIRING CONNECTION Diagram



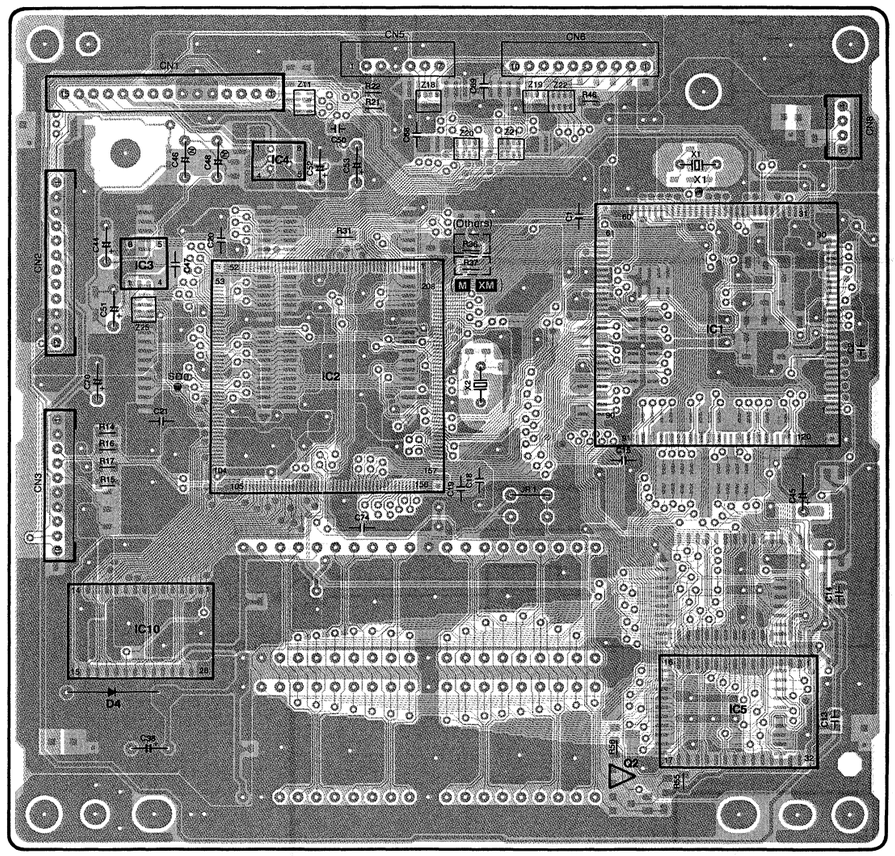
BLOCK Diagram



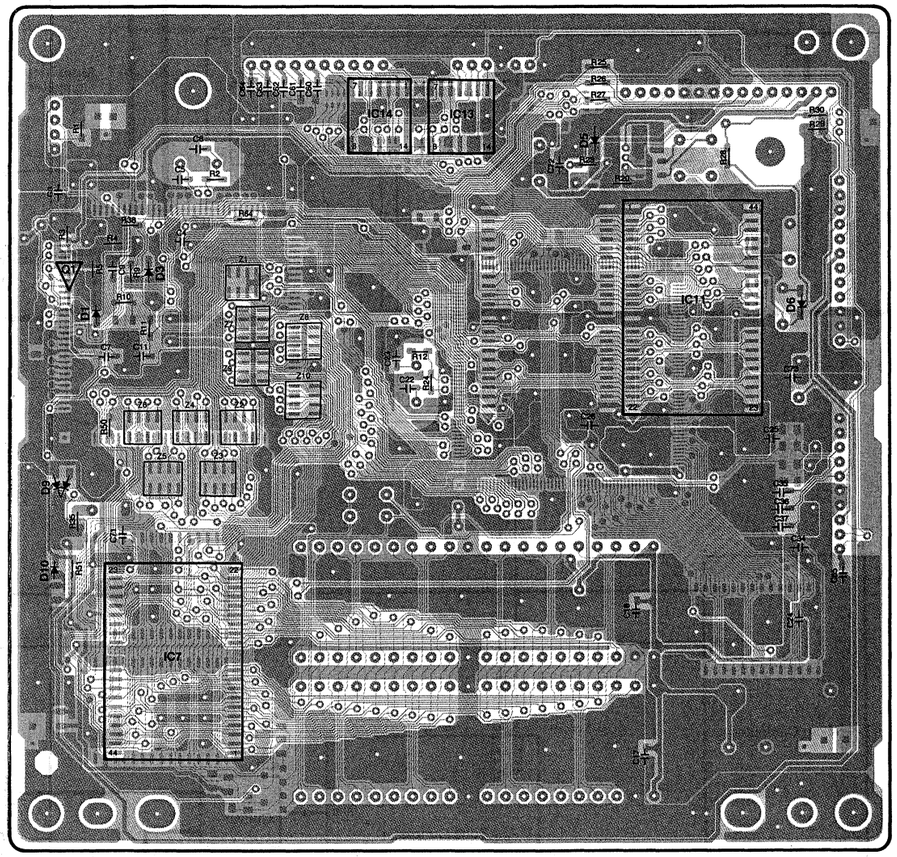
MAIN P.C. Board

Others (SXPG223831)

MAIN M XM (SXPG223841) (COMPONENT SIDE)



(FOIL SIDE)



MAIN

NOTES:

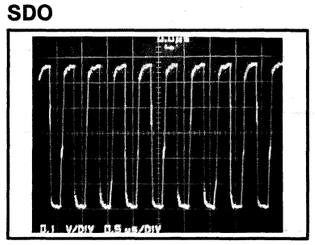
- IC'S
  - IC1: D70236AGD10
  - IC2: D94137GD-201
  - IC3: D6379GR-E1
  - IC4: M5218AFP
  - IC5: T518129CFWL8
  - IC7: QSIGU3C16365
  - IC10: TC51832AFL70
  - IC11: QSIGU3C16853
  - IC13, 14: D74HC08GS
- TRANSISTORS
  - Q1: 2SB709AR
  - Q2: 2SD601AQ
- DIODES
  - D1: MA8030L
  - D3: MA110
  - D4: MA2062LF
  - D5: MA8056
  - D6: MA8051L
  - D9: MA151WK
  - D10: MA8056

■ Measuring Conditions

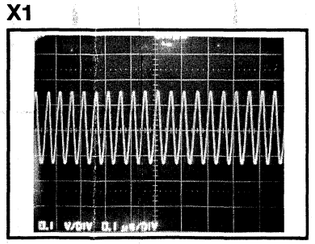
Set the initial setting mode (Refer to page I-3)

- KEYBOARD C4
- RHYTHM ..... Start
- TEMPO ..... ♩ =120

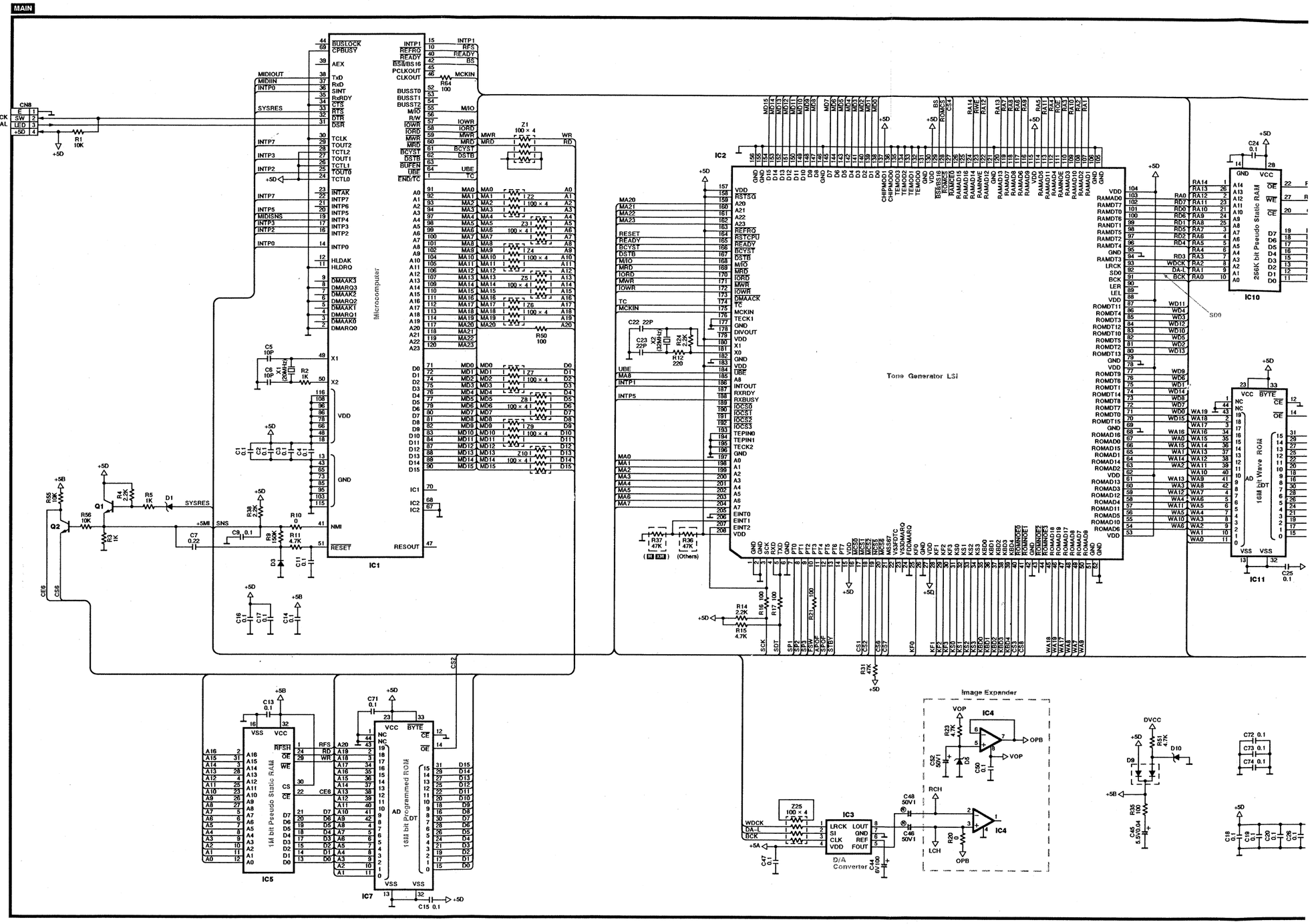
SDO

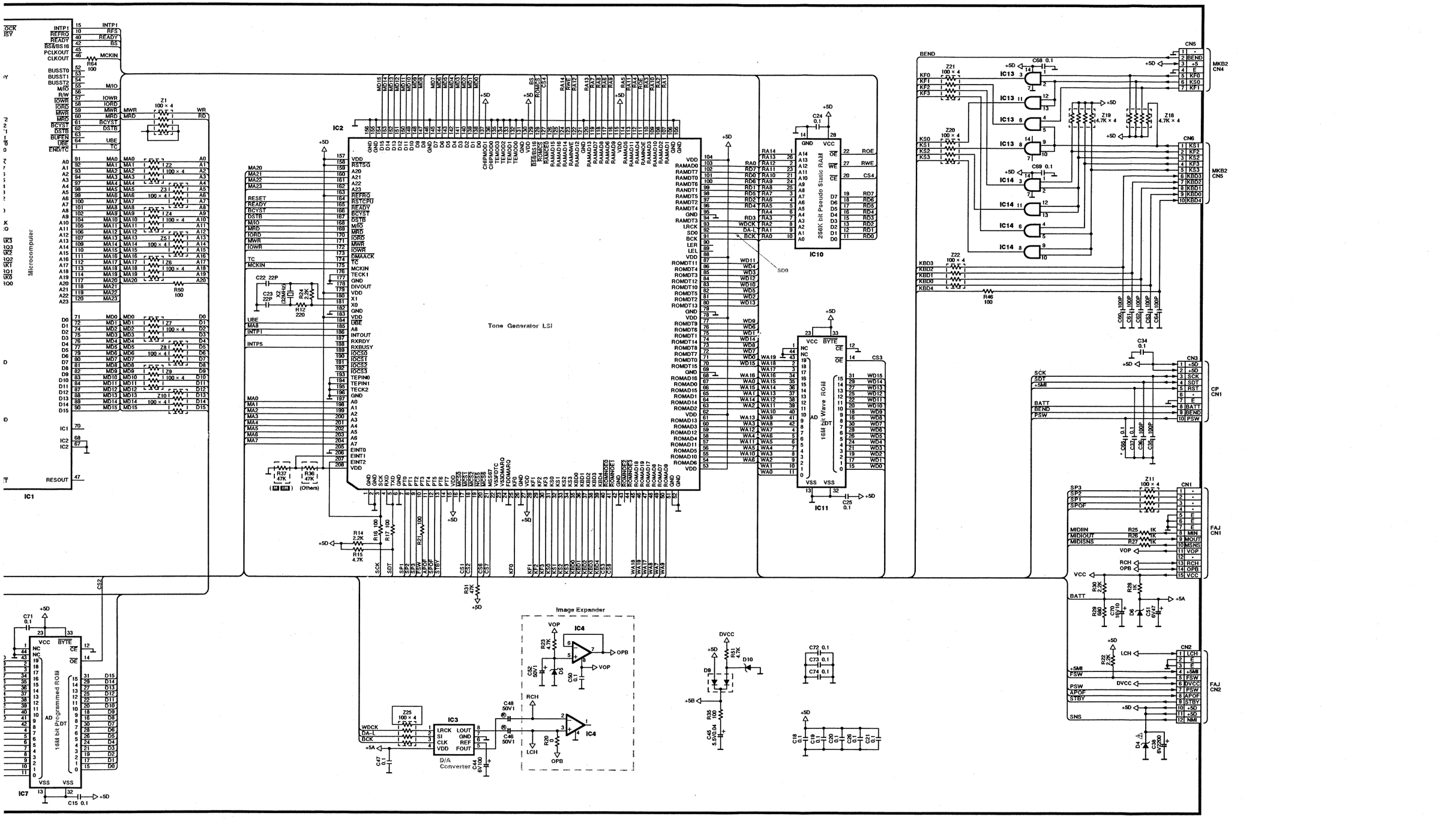


X1

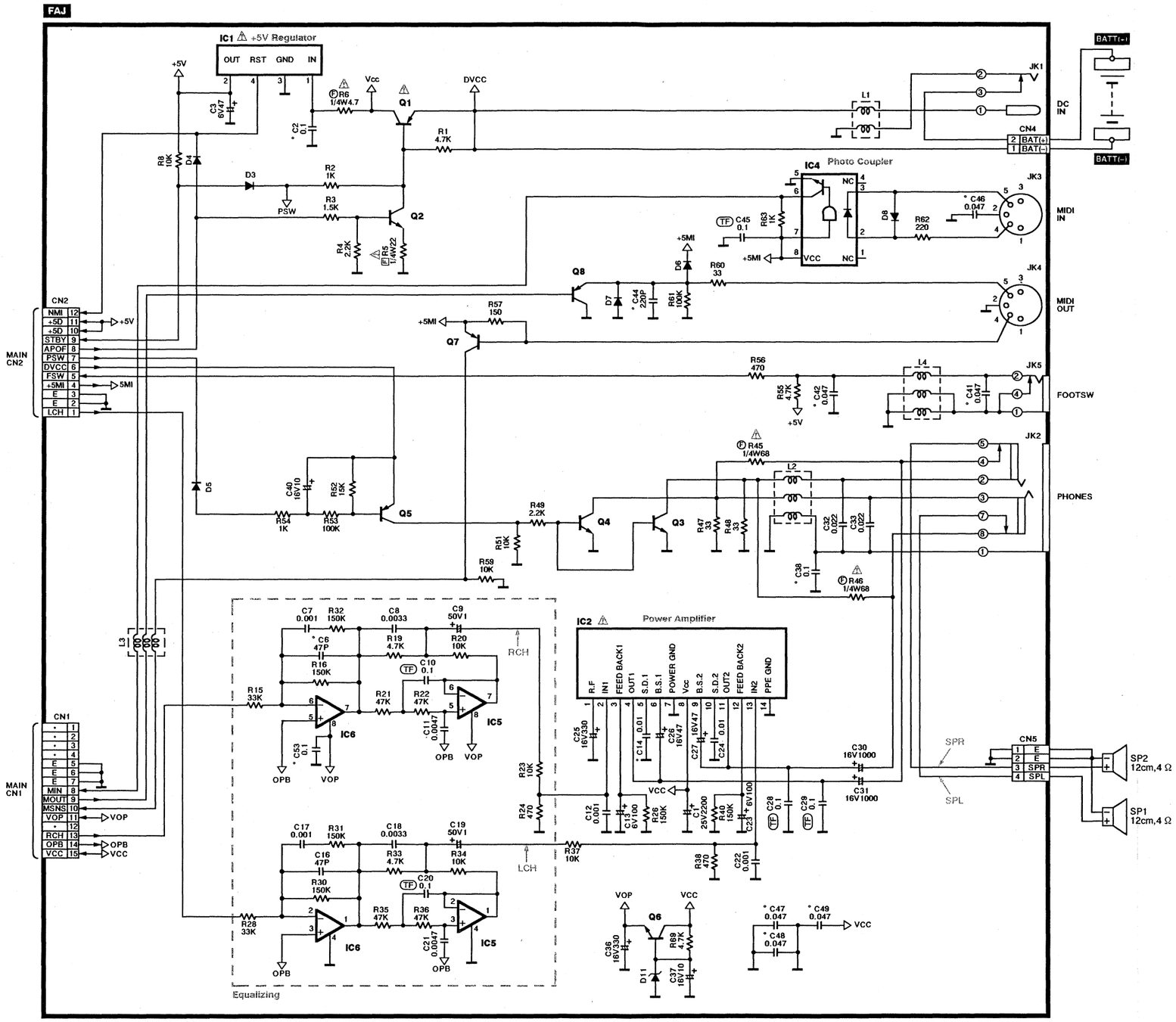


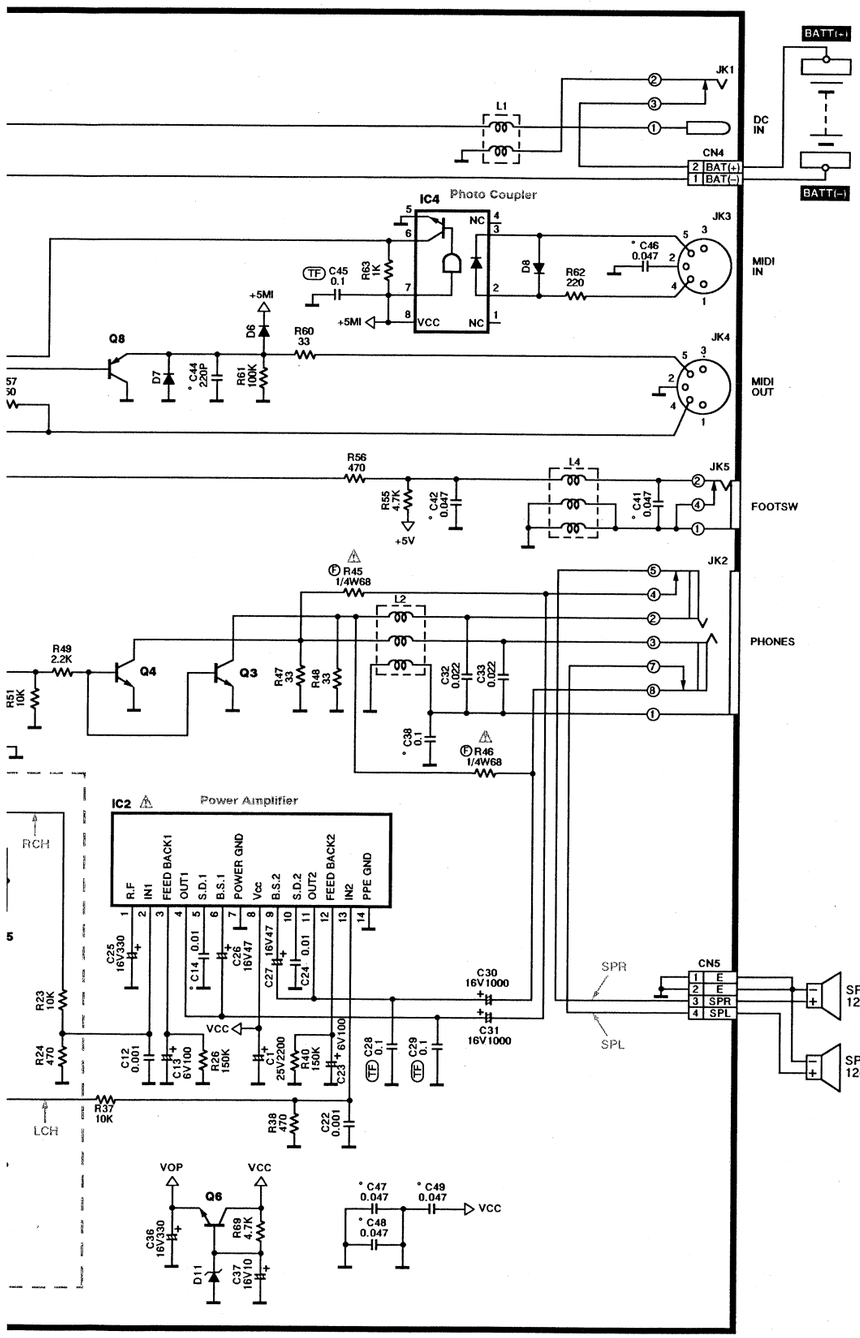
MAIN P.C. Diagram




IC1
IC2
IC4
IC7
IC10
IC11
IC13
IC14
Tone Generator LSI
Microcomputer
16M bit Programmed ROM
Image Expander
D/A Converter
256K bit Pseudo Static RAM
16M bit Wave ROM
MKB2 CN4
MKB2 CN5
FAJ CN1
FAJ CN2
CP CN1
BEND
SDO
DVCC
+5D
+5A
+5B
+5Ω

FAJ/BATT (+)/BATT (−) P.C. Diagram

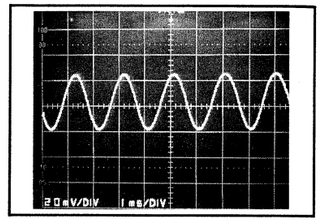




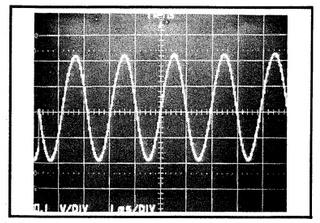
■ Measuring Conditions

1. The tone signal output varies with the level of key pressing force. In this measurement, the waveform obtained with maximum key pressing force is shown.
2. Press and hold E3 key and E4 key simultaneously, turn on the play switch.
   - Main volume 4
   - Keyboard ..... C4 key
   - Sound button 4

RCH, LCH

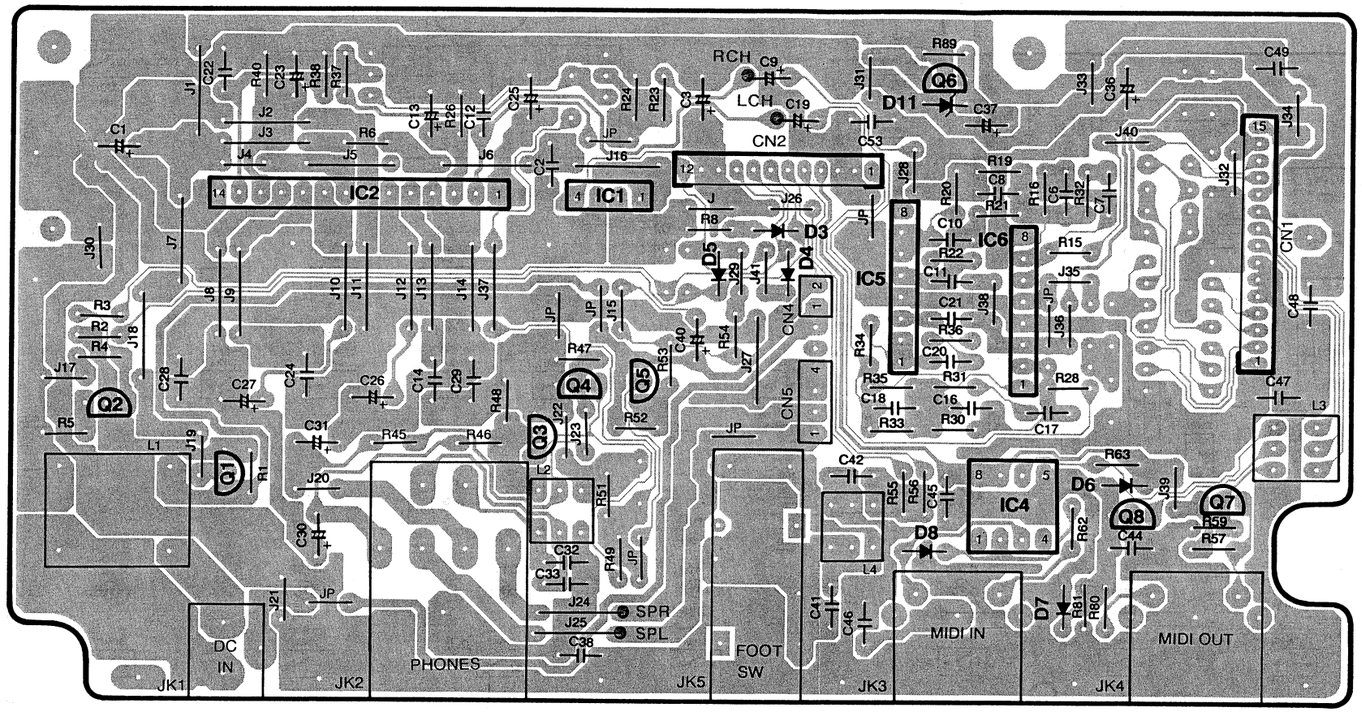


SPR, SPL



FAJ/BATT (+)/BATT (−) P.C. Board

FAJ (SXPG223921C)

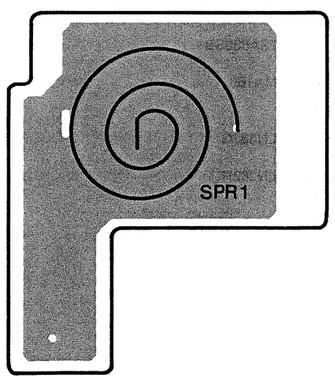


FAJ

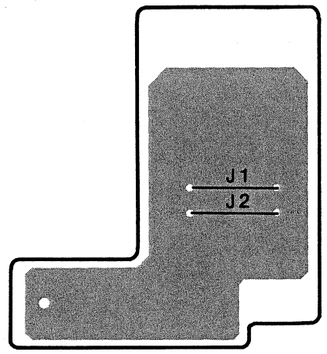
NOTES:

- IC'S
  - IC1: PQ05RR1
  - IC2: LA4508
  - IC4: QCPL-260L
  - IC5, 6: M5218AL
- TRANSISTORS
  - Q1: 2SA1643
  - Q2: 2SC3940ARS
  - Q3, 4: 2SC1815GR
  - Q5: 2SA1015-GR
  - Q6: 2SC1815GR
  - Q7, 8: 2SA1015-GR
- DIODES
  - D3~8: MA165
  - D11: MA4100L

BATT− (SXPG225211C)

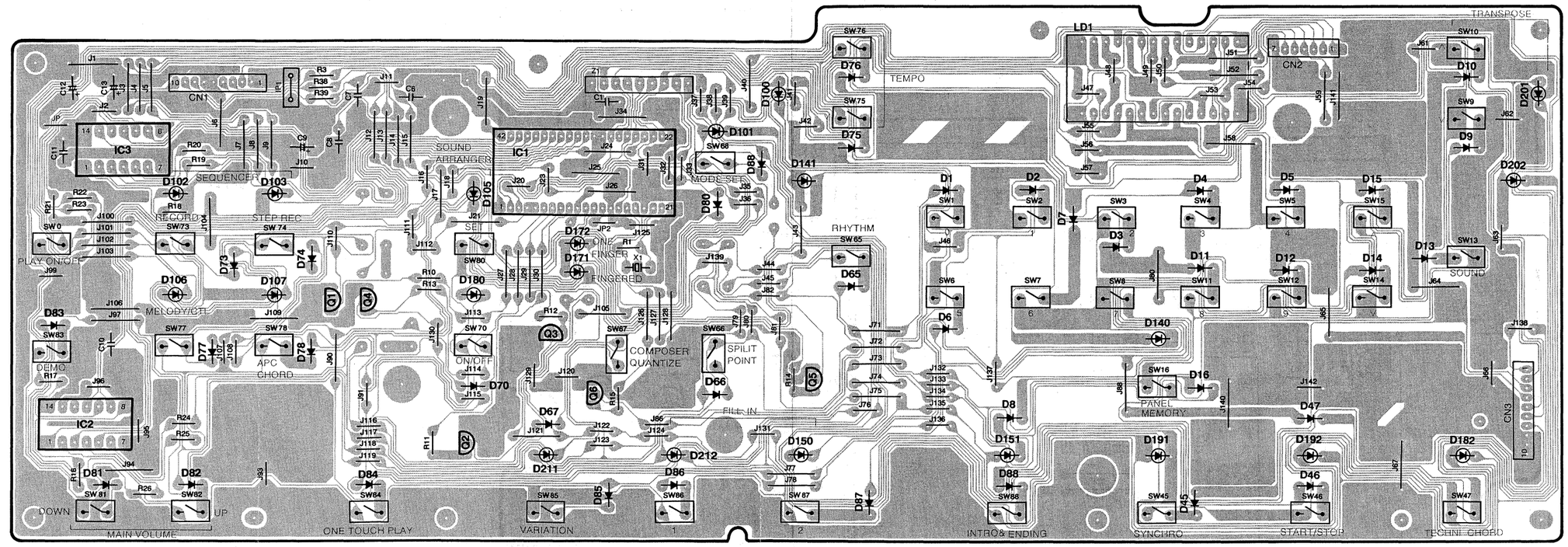


BATT+ (SXPG225211B)

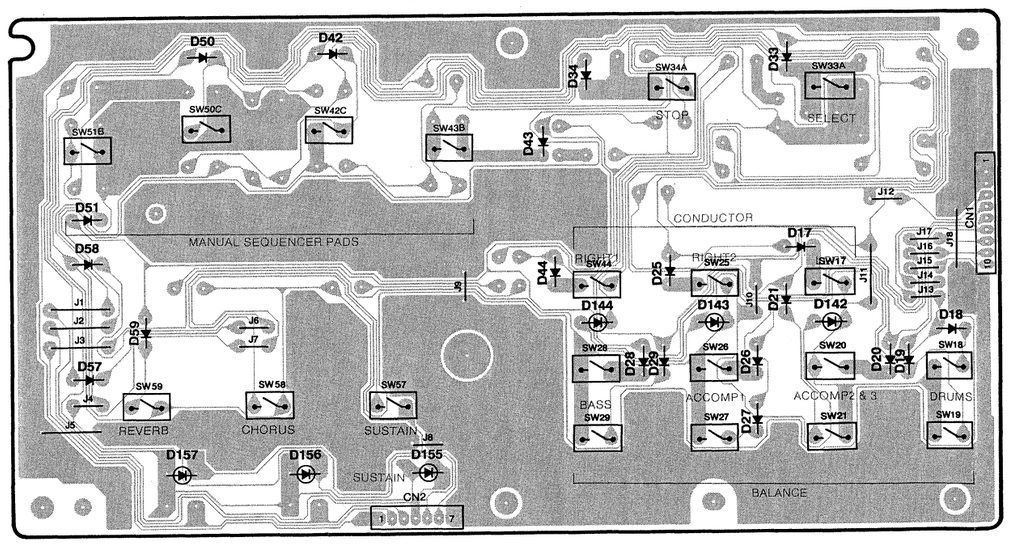


CPR/CPL P.C. Board

CPL (SXPG223921A)



CPR (SXPG223921B)



CPR

NOTE:

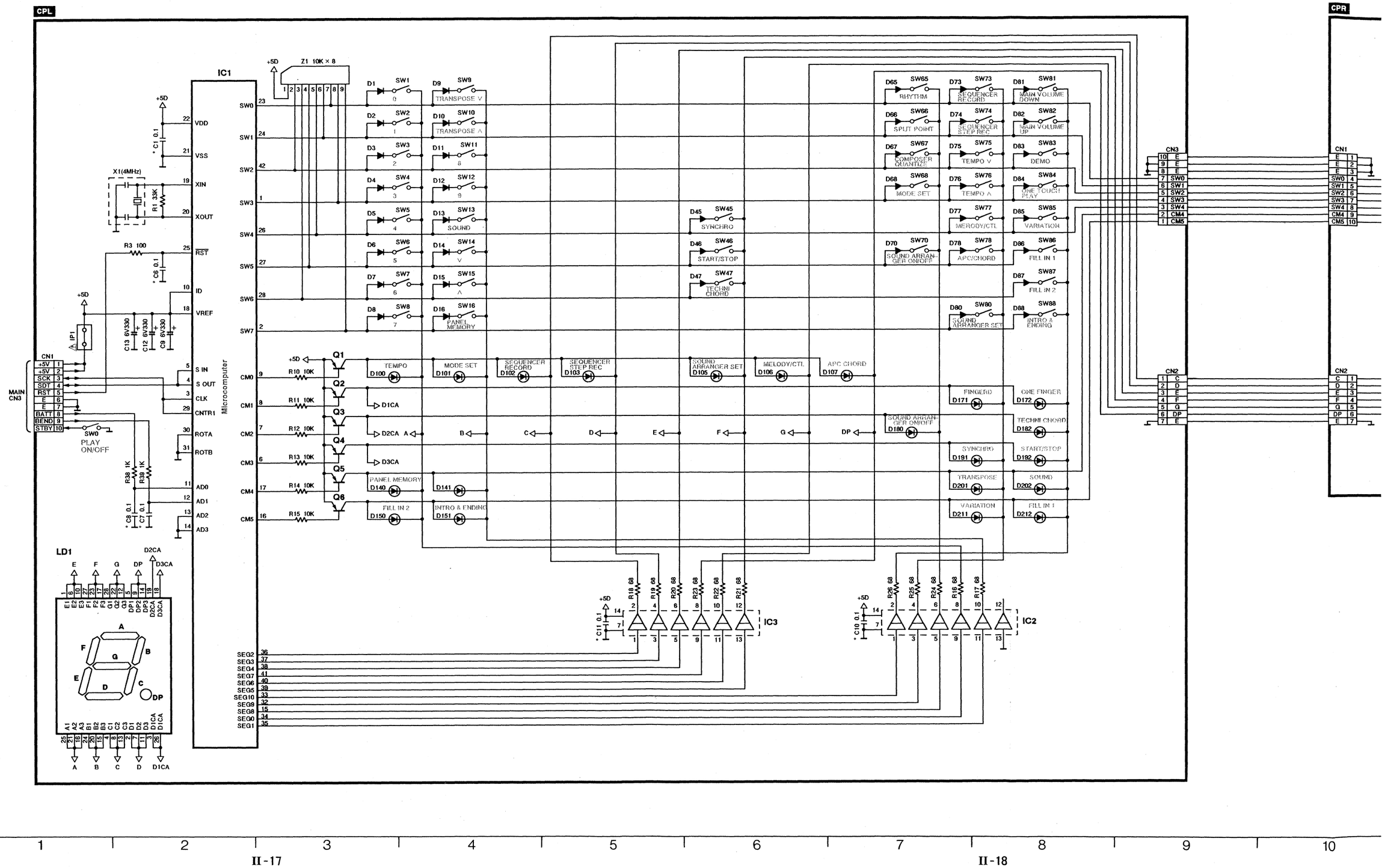
- DIODES
  - D17～21, 25～29, 33, 34, 42～44, 50, 51, 57～59: MA165
  - D142～144, 155～157: LN282R

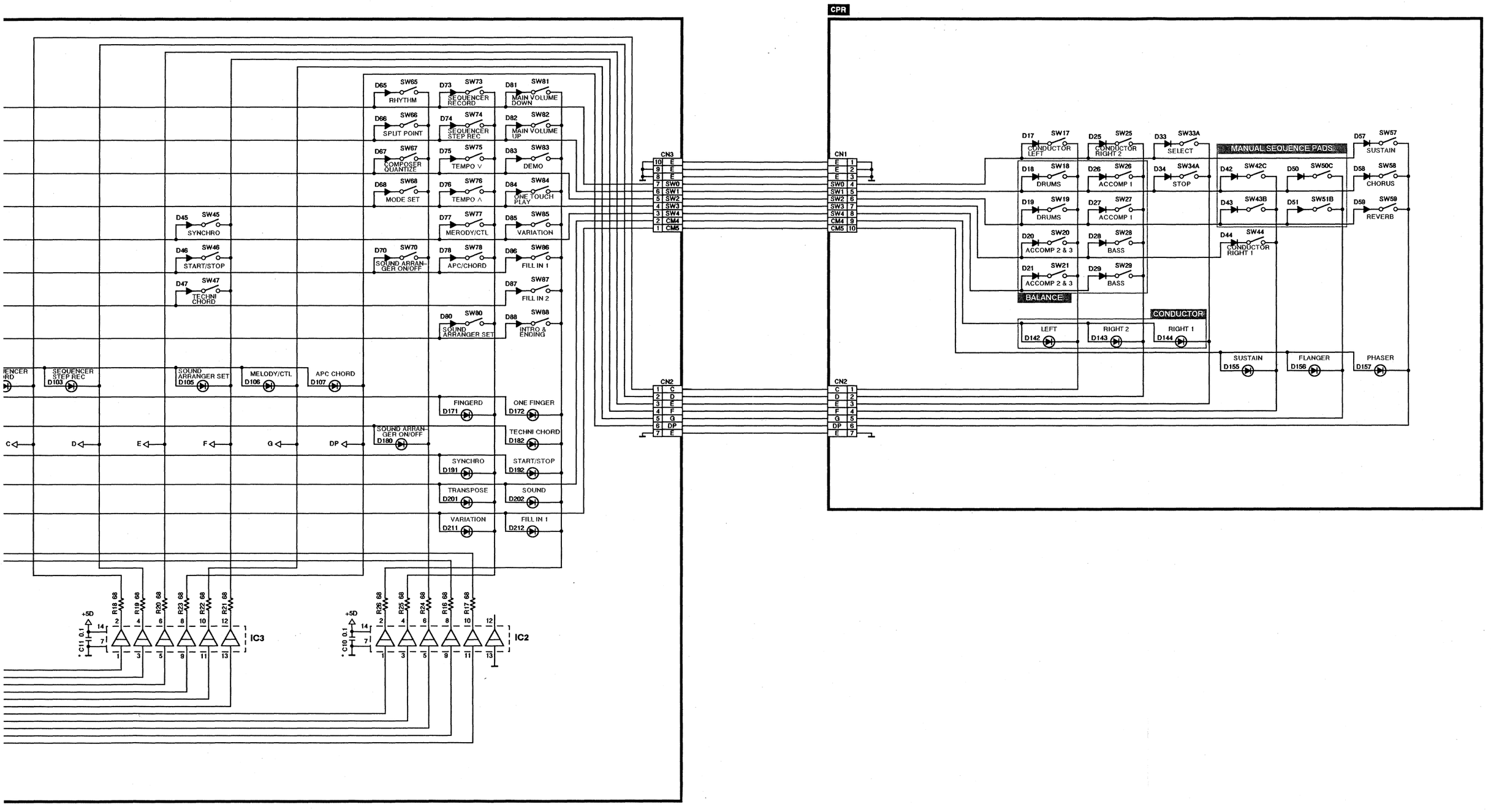
CPL

NOTES:

- IC'S
  - IC1: M37471M2196S
  - IC2, 3: HD74LS07P
- TRANSISTORS
  - Q1～6: 2SA830SB
- DIODES
  - D1～16, 45～47, 65～68, 70, 73～78, 80～88: MA165
  - D100～103, 105～107, 140, 180, 201: LN382G
  - D141, 150, 151, 171, 172, 182, 191, 192, 202, 211, 212: LN282R

CPR/CPL P.C. Diagram

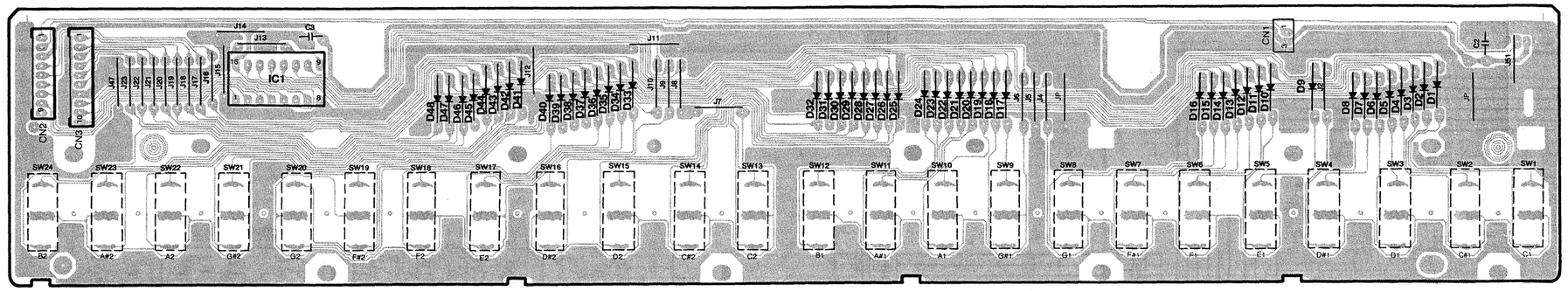




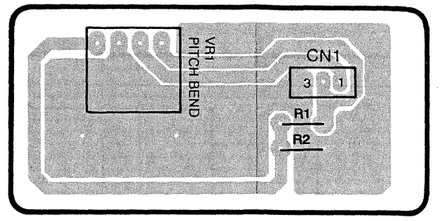
5 6 7 8 9 10 11 12 13 14

MKB1/MKB2/MKB3/BEND

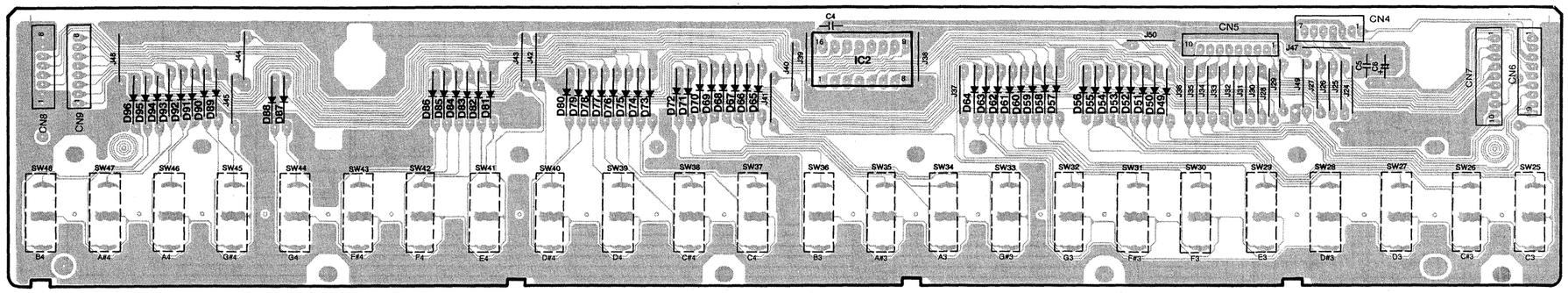
MKB1 (SXPG224811A)


CN2
CN3
IC1
J14
J13
C3
J11
J7
CN1
C2
J1
SW24 SW23 SW22 SW21 SW20 SW19 SW18 SW17 SW16 SW15 SW14 SW13 SW12 SW11 SW10 SW9 SW8 SW7 SW6 SW5 SW4 SW3 SW2 SW1
B2 A#2 A2 G#2 G2 F#2 F2 E2 D#2 D2 C#2 C2 B1 A#1 A1 G#1 G1 F#1 F1 E1 D#1 D1 C#1 C1

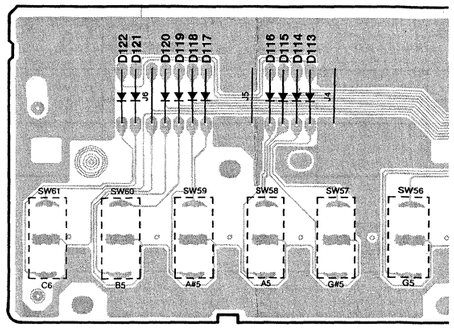
BEND (SXPG223711D)

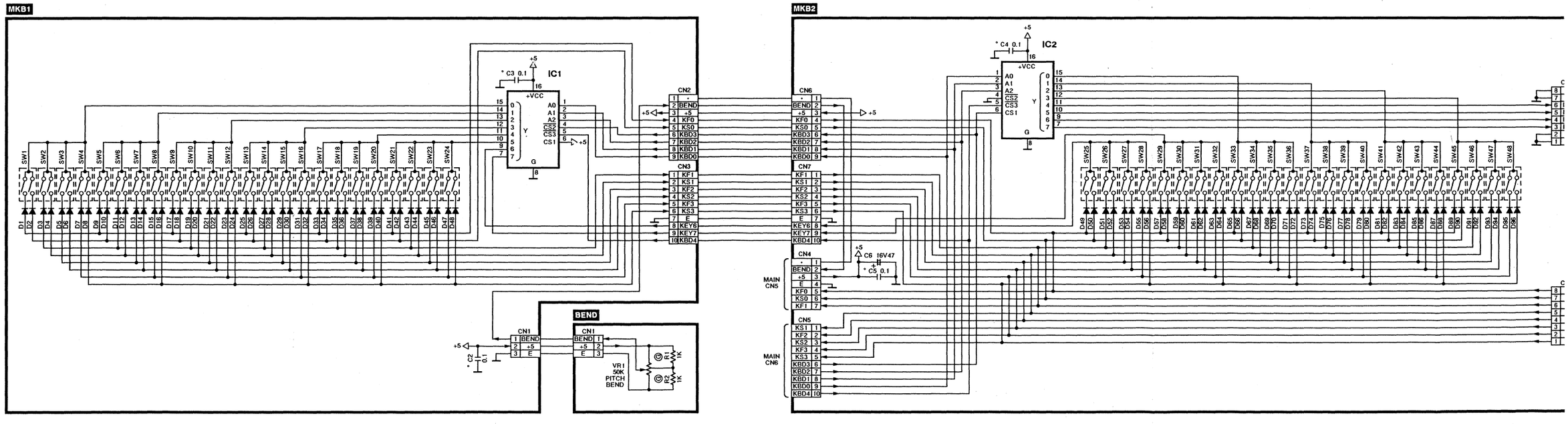


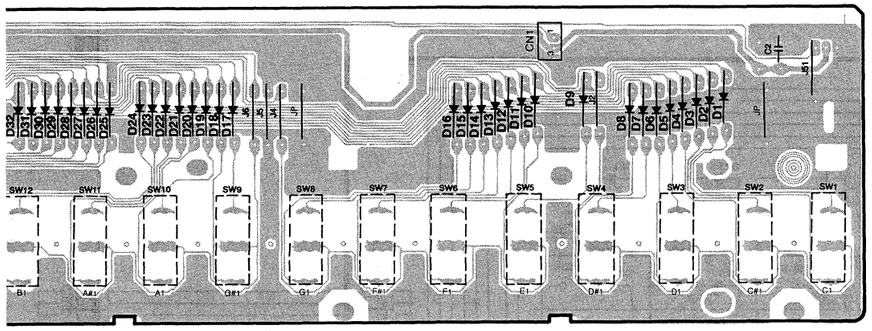
MKB2 (SXPG224811B)


CON8
CN9
C4
IC2
J50
CN5
CN4
CN7
CN6
SW48 SW47 SW46 SW45 SW44 SW43 SW42 SW41 SW40 SW39 SW38 SW37 SW36 SW35 SW34 SW33 SW32 SW31 SW30 SW29 SW28 SW27 SW26 SW25
B4 A#4 A4 G#4 G4 F#4 F4 E4 D#4 D4 C#4 C4 B3 A#3 A3 G#3 G3 F#3 F3 E3 D#3 D3 C#3 C3

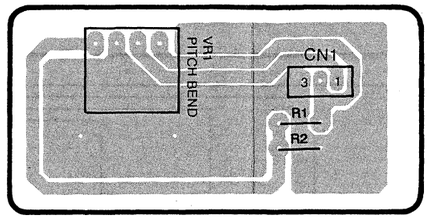
MKB3 (SXPG220011)



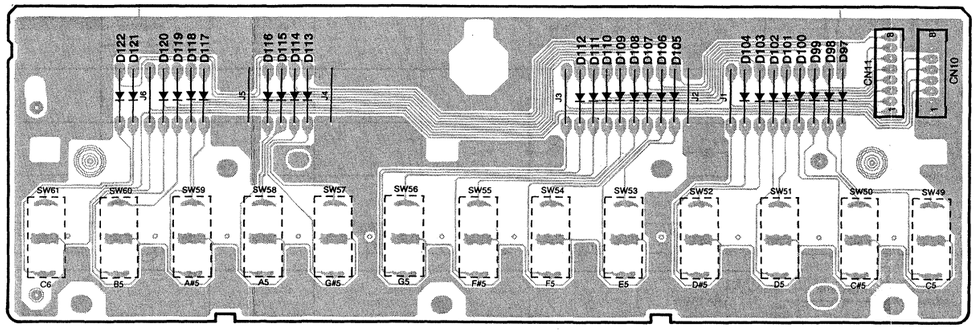




BEND (SXPG223711D)



MKB3 (SXPG220011)



MKB1

NOTES:

- IC
  IC1: HD74LS138P
- DIODES
  D1～48: MA165

MKB2

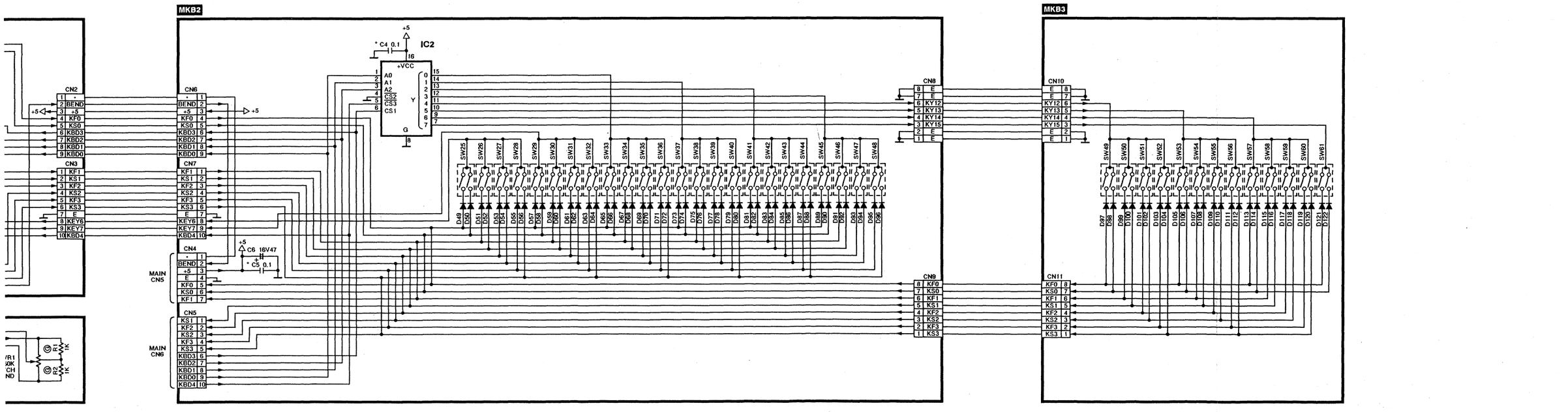
NOTES:

- IC
  IC2: HD74LS138P
- DIODES
  D49～96: MA165

MKB3

NOTE:

- DIODES
  D97～122: MA165



5 6 7 8 9 10 11 12 13 14

REPLACEMENT PARTS LIST.....P.C.B. and Wiring Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■ PRINTED CIRCUIT BOARD

	RTL	Area	Part No.	Description	P/S
○	RTL	EN MC EK EZ EW EF EA EH EP XS XL XR X XD XP XT	SXPG223831	MAIN	1
○	RTL	M XM	SXPG223841	MAIN	1
○	RTL		SXPG223921C	FAJ	1
○	RTL		SXPG225211B	BATT(+)	1
○	RTL		SXPG225211C	BATT(−)	1
○	RTL		SXPG223921B	CPR	1
○	RTL		SXPG223921A	CPL	1
S	RTL		SXPG224811A	MKB1	1
S	RTL		SXPG224811B	MKB2	1
	RTL		SXPG220011	MKB3	1
S	RTL		SXPG223711D	BEND	1

MAIN MAIN CIRCUIT

	Ref. No.	Part No.	Description	P/S
		INTEGRATED CIRCUITS		
	IC1	D70236AGD10	Microcomputer	1
	IC2	D94137GD-201	Tone Generator LSI	1
	IC3	D6379GR-E1	D/A Converter	1
	IC4	M5218AFP	Operational Amplifier	1
○	IC5	T518129CFWL8	1M bit Pseudo Static RAM	1
○	IC7	QSIGU3C16365	16M bit Programmed ROM	1
	IC10	TC51832AFL70	256K bit Static RAM	1
○	IC11	QSIGU3C16853	16M bit Wave ROM	1
	IC13, 14	D74HC08GS	Quad 2 Input And Gate	2
		TRANSISTORS		
	Q1	2SB709AR	Transistor	1
	Q2	2SD601AQ	Transistor	1
		DIODES		
	D1	MA8030L	Zener, 3.1V	1
	D3	MA110	Diode	1
	D4 ⚠	MA2062LF	Zener, 6.2V	1
	D5	MA8056	Zener, 5.6V	1
○	D6	MA8051L	Zener, 5.1V	1
	D9	MA151WK	Diode	1
	D10	MA8056	Zener, 5.6V	1

Ref. No.	Part No.	Description	P/S
	OSCILLATORS		
X1	SVQGA20MX040	20MHz, Ceramic Oscillator	1
X2	QSXG1I3200A	32MHz, Quartz Oscillator	1
	COMPONENT COMBINATIONS		
Z1~10	EXBS8V101J	100Ω×4	10
Z11	EXBV8V101J	100Ω×4	1
Z18, 19	EXBV8V472J	4.7kΩ×4	2
Z20~22, 25	EXBV8V101J	100Ω×4	4
	RESISTORS		
R1	ERJ6GEYJ103V	10kΩ	1
R2, 3	ERJ6GEYJ102V	1kΩ	2
R4	ERJ6GEYJ222V	2.2kΩ	1
R5	ERJ6GEYJ102V	1kΩ	1
R9	ERJ6GEYJ154V	150kΩ	1
R10	ERJ6GEY0R00V	0Ω	1
R11	ERJ6GEYJ472V	4.7kΩ	1
R12	ERJ6GEYJ221V	220Ω	1
R14	ERJ6GEYJ222V	2.2kΩ	1
R15	ERJ6GEYJ472V	4.7kΩ	1
R16, 17	ERJ6GEYJ101V	100Ω	2
R20	ERJ6GEY0R00V	0Ω	1
R21	ERJ6GEYJ101V	100Ω	1
R22	ERJ6GEYJ222V	2.2kΩ	1
R23	ERJ6GEYJ472V	4.7kΩ	1
R24	ERJ6GEYJ222V	2.2kΩ	1
R25~28	ERJ6GEYJ102V	1kΩ	4
R29	ERJ6GEYJ681V	680Ω	1
R30	ERJ6GEYJ222V	2.2kΩ	1
R31	ERJ6GEYJ473V	47kΩ	1
R35	ERJ6GEYJ101V	100Ω	1
R36	ERJ6GEYJ473V	47kΩ, EN MC EK EZ EW EF EA EH EP XS XL XR X XD XP XT	1
R37	ERJ6GEYJ473V	47kΩ, M XM	1
R38	ERJ6GEYJ222V	2.2kΩ	1
R46, 50	ERJ6GEYJ101V	100Ω	2
R51	ERJ6GEYJ472V	4.7kΩ	1
R55, 56	ERJ6GEYJ103V	10kΩ	2
R64	ERJ6GEYJ101V	100Ω	1

Ref. No.	Part No.	Description	P/S
CAPACITORS			
C1~4	ECUV1H104ZFX	0.1µF	4
C5, 6	ECUV1H100DCN	10pF	2
C7	ECUV1E224ZFX	0.22µF	1
C9, 11, 13~21	ECUV1H104ZFX	0.1µF	11
C22, 23	ECUV1H220JCN	22pF	2
C24~26, 34	ECUV1H104ZFX	0.1µF	4
C35, 36	ECUV1H101JG	100pF	2
C37	ECUV1H104ZFX	0.1µF	1
C38	ECEA0JU222	2200µF, 6.3V	1
C44	ECEA0JKA101	100µF, 6.3V	1
C45	FM0H473Z	0.04µ, 5.5V	1
C46	ECEA1HKN010	1µF, 50V	1
C47	ECUV1H104ZFX	0.1µF	1
C48	ECEA1HKN010	1µF, 50V	1
C50	ECUV1H104ZFX	0.1µF	1
C51	ECEA0JKA470	47µF, 6.3V	1
C52	ECEA1HKA010	1µF, 50V	1
C60~64	ECUV1H101JG	100pF	5
C65, 68, 69	ECUV1H104ZFX	0.1µF	3
C70	ECEA1CKA100	10µF, 16V	1
C71~74	ECUV1H104ZFX	0.1µF	4

FAJ FILTER & AMP CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
○ IC1 ⚠	PQ05RR1	+5V Voltage Regulator	1
IC2 ⚠	LA4508	Power Amplifier	1
IC4	QCPL-260L	Photo Coupler	1
IC5, 6	M5218AL	Operational Amplifier	2
TRANSISTORS			
Q1 ⚠	2SA1643	Transistor	1
Q2	2SC3940ARS	Transistor	1
S Q3, 4	2SC1815GR	Transistor	2
S Q5	2SA1015-GR	2SA933STRS (SUB. Part)	1
S Q6	2SC1815GR	Transistor	1
S Q7, 8	2SA1015-GR	2SA933STRS (SUB. Part)	2
DIODES			
D3~8	MA165	Diode	6
D11	MA4100L	Zener, 10V	1
COIL & LINE FILTER			
L1	QLFG001A	DC LINE Filter	1
L2~4	QLQGT3T150SA	15µ×3	3
JACKS			
JK1	QJSG006AA	DC IN	1
JK2	SJJG100A	PHONES	1
JK3	SJSG1370A	MIDI IN	1
JK4	SJSG1370A	MIDI OUT	1
JK5	QJJG003AA	FOOT SW	1
RESISTORS			
R1	ERDS2TJ472	4.7kΩ	1
R2	ERDS2TJ102	1kΩ	1
R3	ERDS2TJ152	1.5kΩ	1

Ref. No.	Part No.	Description	P/S
R4	ERDS2TJ222	2.2kΩ	1
R5 ⚠	ERD2FCVG220	22Ω, 1/4W, Fuse Type	1
R6 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
R8	ERDS2TJ103	10kΩ	1
R15	ERDS2TJ333	33kΩ	1
R16	ERDS2TJ154	150kΩ	1
R19	ERDS2TJ472	4.7kΩ	1
R20	ERDS2TJ103	10kΩ	1
R21, 22	ERDS2TJ473	47kΩ	2
R23	ERDS2TJ103	10kΩ	1
R24	ERDS2TJ471	470Ω	1
R26	ERDS2TJ154	150kΩ	1
R28	ERDS2TJ333	33kΩ	1
R30~32	ERDS2TJ154	150kΩ	3
R33	ERDS2TJ472	4.7kΩ	1
R34	ERDS2TJ103	10kΩ	1
R35, 36	ERDS2TJ473	47kΩ	2
R37	ERDS2TJ103	10kΩ	1
R38	ERDS2TJ471	470Ω	1
R40	ERDS2TJ154	150kΩ	1
R45, 46 ⚠	ERD25FVJ680	68Ω, 1/4W, Flame-Proof	2
R47, 48	ERDS2TJ330	33Ω	2
R49	ERDS2TJ222	2.2kΩ	1
R51	ERDS2TJ103	10kΩ	1
R52	ERDS2TJ153	15kΩ	1
R53	ERDS2TJ104	100kΩ	1
R54	ERDS2TJ102	1kΩ	1
R55	ERDS2TJ472	4.7kΩ	1
R56	ERDS2TJ471	470Ω	1
R57	ERDS2TJ151	150Ω	1
R59	ERDS2TJ103	10kΩ	1
R60	ERDS2TJ330	33Ω	1
R61	ERDS2TJ104	100kΩ	1
R62	ERDS2TJ221	220Ω	1
R63	ERDS2TJ102	1kΩ	1
R69	ERDS2TJ472	4.7kΩ	1
CAPACITORS			
○ C1	ECA1EM222E	2200µ, 25V	1
C2	ECRF1H104ZF	0.1µF	1
C3	ECEA0JKA470	47µF, 6.3V	1
C6	ECCR1H470J	47pF	1
C7	ECQB1H102JF	0.001µF	1
C8	ECQB1H332JF	0.0033µF	1
C9	ECEA1HKA010	1µF, 50V	1
C10	ECQV1H104JM	0.1µF	1
C11	ECQB1H472JF	0.0047µF	1
C12	ECQB1H102JF	0.001µF	1
C13	ECEA0JKA101	100µF, 6.3V	1
C14	ECQB1H103JF	0.01µF	1
C16	ECCR1H470J	47pF	1
C17	ECQB1H102JF	0.001µF	1
C18	ECQB1H332JF	0.0033µF	1
C19	ECEA1HKA010	1µF, 50V	1
C20	ECQV1H104JM	0.1µF	1
C21	ECQB1H472JF	0.0047µF	1
C22	ECQB1H102JF	0.001µF	1
C23	ECEA0JKA101	100µF, 6.3V	1
C24	ECQB1H103JF	0.01µF	1
C25	ECEA1CU331	330µF, 16V	1
C26, 27	ECEA1CKA470	47µF, 16V	2
C28, 29	ECQV1H104JM	0.1µF	2
C30, 31	ECEA1CU102	1000µF, 16V	2
C32, 33	ECQB1H223JF	0.022µF	2
C36	ECEA1CU331	330µF, 16V	1
C37	ECEA1CKA100	10µF, 16V	1
C38	ECRF1H104ZF	0.1µF	1

Ref. No.	Part No.	Description	P/S
C40	ECEA1CKA100	10µF, 16V	1
C41, 42	ECKR1E473ZV	0.047µF	2
C44	ECCR1H221J	220pF	1
C45	ECQV1H104JM	0.1µF	1
C46~49	ECKR1E473ZV	0.047µF	4
C53	ECRF1H104ZF	0.1µF	1

BATT(−) BATTERY (−) CIRCUIT

Ref. No.	Part No.	Description	P/S
Spring			
SPR1	SJCG20A	Spring	1

CPR CONTROL PANEL RIGHT CIRCUIT

Ref. No.	Part No.	Description	P/S
DIODES			
D17~21, 25~29, 33, 34, 42~44, 50, 51, 57~59	MA165	Diode	20
D142~144, 155~157	LN282R	LED (Red)	6
SWITCHES			
S17~21, 25~29, 33A, 34A, 42C, 43B, 44, 50C, 51B, 57~59	EVQ21507K	Push Switch	20

CPL CONTROL PANEL LEFT CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	M37471M2196S	16 bit Microcomputer	1
IC2, 3	HD74LS07P	Hex Buffers	2
TRANSISTORS			
Q1~6	2SA830SB	Transistor	6
DIODES			
D1~16, 45~47, 65~68, 70, 73~78, 80~88	MA165	Diode	39
D100~103, 105~107, 140, 180, 201	LN382G	LED (Green)	10
D141, 150, 151, 171, 172, 182, 191, 192, 202, 211, 212	LN282R	LED (Red)	11
DISPLAY			
LD1	LB603VF	Triple 8 Segments Display	1
OSCILLATOR			
X1	EF0EC4004A3	4MHz, Ceramic Oscillator	1
COMPONENT COMBINATION			
Z1	EXBPI8103JM	10kΩ×8	1
SWITCHES			
S0~16, 45~47, 66~68, 70, 73~78, 80~88	EVQ21507K	Push Switch	39
IC PROTECTOR			
IP1 ⚠	ICP-N10T104	IC Protector	1
RESISTORS			
R1	ERDS2TJ333	33kΩ	1
R3	ERDS2TJ101	100Ω	1
R10~15	ERDS2TJ103	10kΩ	6
R16~26	ERDS2TJ680	68Ω	11
R38, 39	ERDS2TJ102	1kΩ	2
CAPACITORS			
C1, 6~8	ECRF1H104ZF	0.1µF	4
C9	ECEA0JKA331	330µF, 6.3V	1
C10, 11	ECRF1H104ZF	0.1µF	2
C12, 13	ECEA0JKA331	330µF, 6.3V	2

MKB1 MANUAL KEYBOARD 1 CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUIT			
IC1	HD74LS138P	3 to 8 Decoder	1
DIODES			
D1~48	MA165	Diode	48
CAPACITORS			
C2, 3	ECRF1H104ZF	0.1µF	2

MKB2 MANUAL KEYBOARD 2 CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUIT			
IC2	HD74LS138P	3 to 8 Decoder	1
DIODES			
D49~96	MA165	Diode	48
CAPACITORS			
C4, 5	ECRF1H104ZF	0.1µF	2
C6	ECEA1CKA470	47µF, 16V	1

MKB3 MANUAL KEYBOARD 3 CIRCUIT

Ref. No.	Part No.	Description	P/S
DIODES			
D97~122	MA165	Diode	26

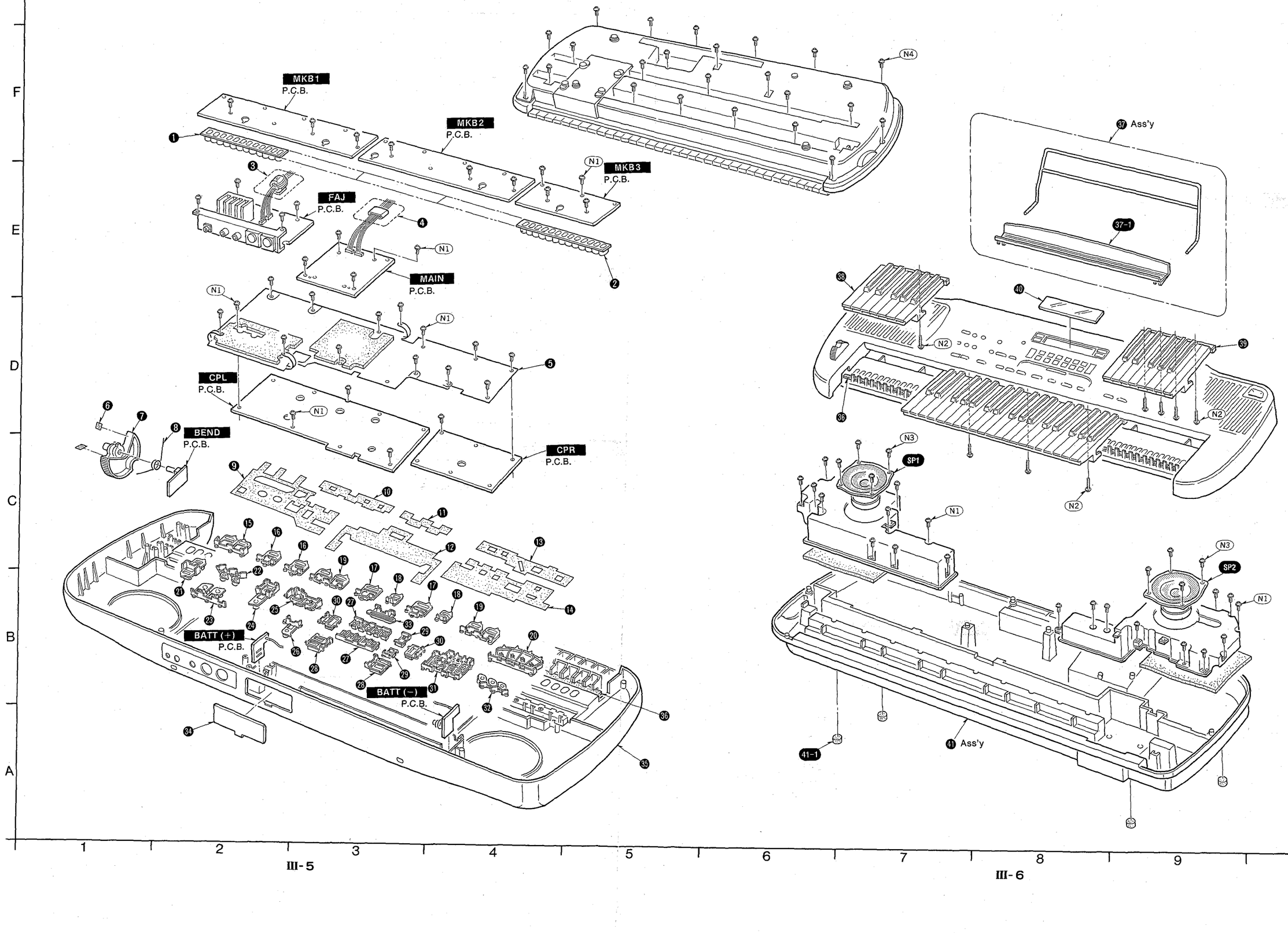
BEND PITCH BEND CIRCUIT

Ref. No.	Part No.	Description	P/S
VARIABLE RESISTOR			
VR1	QRVG16A02B54	50kΩ	1
RESISTORS			
R1, 2	ER0S2CKF1001	1kΩ, ±1%	2

■ WIRING PATRS

Ref. No.	Part No.	Description	P/S
○ 1	QEXGSS15020B	Connector with Wire	1
○ 2	QEXGSS12015B	Connector with Wire	1
○ 3	QEXGEH04080B	Connector with Wire	1
○ 4	QEXGSS10020B	Connector with Wire	1
○ 5	QEXGSA07020B	Connector with Wire	1

CABINET PARTS LOCATION



REPLACEMENT PARTS LIST.....Cabinet and Chassis Parts

Notes:

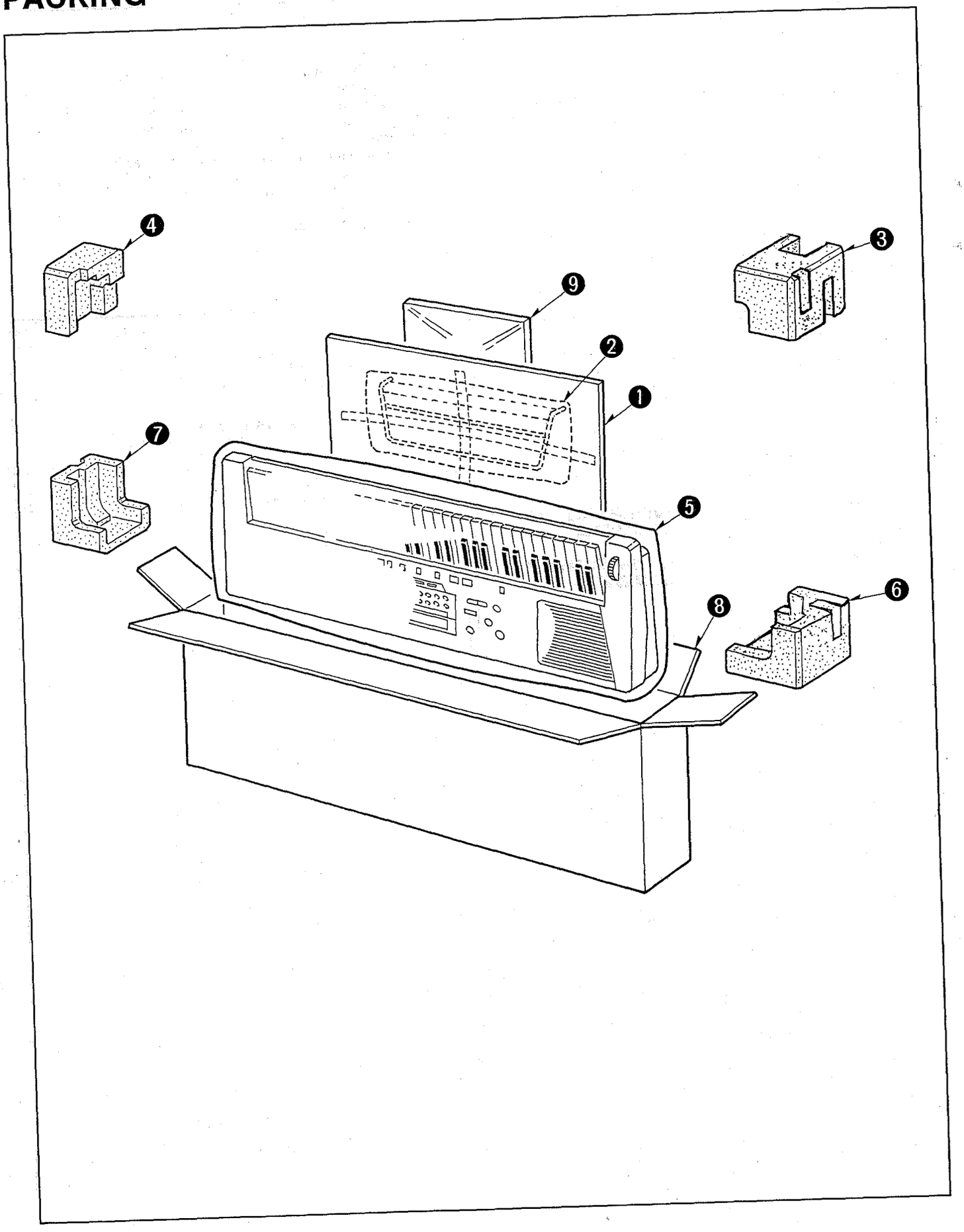
1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. ○ mark are new parts.
3. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthtic resin
   In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./Material column.

■ CABINET & CHASSIS PATRS

	Ref. No.		Part No.	Description	P/S
			SPEAKERS		
○	SP1, 2		QASG12PL02A	12cm, 4Ω	2
			CABINET PARTS		
○	1		QMWG6015CAK	Rubber Switch (12 pcs. on one)	4
○	2		QMWG6014CAK	Rubber Switch (13 pcs. on one)	1
	3		QLZG006A	Core, EN MC EK EZ EW EF EA EH EP XL M XM	1
○	4		QLZG013A	Core, EN MC EK EZ EW EF EA EH EP XL M XM	1
○	5		QSCG083AK	Shield	1
	6		QMFG4076AAK	Felt	2
	7		SBNG4050A	Wheel Knob	1
○	8		QMBG012AAK	Spring	1
○	9		QMFG4160AAK	Felt	1
○	10		QMFG4162AAK	Felt	1
○	11		QMFG4163AAK	Felt	1
○	12		QMFG4161AAK	Felt	1
○	13		QMFG4165AAK	Felt	1
○	14		QMFG4164AAK	Felt	1
○	15		QGUG1373AAK	Button	1
○	16		QGUG1380AAK	Button	2
○	17		QGUG1379AAK	Button	2
○	18		QGUG1367AAK	Button	2
○	19		QGUG1368AAK	Button	2
○	20		QGUG1386AAK	Button	1
○	21		QGUG1376AAK	Button	1
○	22		QGUG1370BAK	Button	1
○	23		QGUG1382BAK	Button	1
○	24		QGUG1383AAK	Button	1
○	25		QGUG1375AAK	Button	1
○	26		QGUG1371BAK	Button	1
○	27		QGUG1369AAK	Button	2
○	28		QGUG1381AAK	Button	2
○	29		QGUG1378AAK	Button	2
○	30		QGUG1366AAK	Button	2
○	31		QGUG1372AAK	Button	1
○	32		QGUG1370AAK	Button	1
○	33		QGUG1374AAK	Button	1
○	34		QKSGF014ACK	Battery Cover	1
○	35		QYPG1067BAK	Control Panel	1
	36		SHSG1970A	Felt	2
S	37		QYAG3004AAK	Music Stand Ass'y	1
○	37-1	PS	QMRG7065AAK	Table of Music Book	1
	38	ABS	QMWG9020AAK	12 Keys	4
	39	ABS	QMWG9021AAK	13 Keys	1

	Ref. No.	Part No.	Description	P/S
○	40	QKWG024AAK	LED Panel	1
○	41	QYKG181AAK	Bottom Case Ass'y	1
○	41-1	QMRG7070AAK	Foot	4
		SCREWS & WASHERS		
	N1	XTW3+10Q	Screw	51
	N2	XTW3+20Q	Screw	8
	N3	XTW3+10QFZ	Screw	8
	N4	XTW3+20QFZ	Screw	23

PACKING



■ PACKING PATRS

	Ref. No.		Part No.	Description	P/S
			PACKING PARTS		
○	1		QPNG0531AAK	Card Board	1
	2	PE	SPHG1770A	Polyethylene Bag	1
○	3	PS	QPNG0530AAK	Pad	1
○	4	PS	QPNG0529AAK	Pad	1
	5	PE	QPFG002AA	Polyethylene Bag	1
○	6	PS	QPNG0528AAK	Pad	1
○	7	PS	QPNG0527AAK	Pad	1
○	8		QPGG0316AAK	Carton	1
			OPERATING INSTRUCTION MANUAL		
○	9		QQFGKN701AA	Operating instruction manual, EN	1
○	9-1		QQTG0351A	DANSK	1
○	9-2		QQTG0352A	ENGLISH	1
○	9		QQFGKN701BA	Operating instruction manual, EK XL XR XS	1
○	9		QQFGKN701CA	Operating instruction manual, EA	1
○	9		QQFGKN701DA	Operating instruction manual, EW	1
○	9-1		QQTG0354A	FRANCAIS	1
○	9-2		QQTG0353A	DEUTSCH	1
○	9-3		QQTG0355A	ITALIANO	1
○	9		QQFGKN701EA	Operating instruction manual, EF	1
○	9-1		QQTG0354A	FRANCAIS	1
○	9-2		QQTG0355A	ITALIANO	1
○	9		QQFGKN701FA	Operating instruction manual, EH	1
○	9-1		QQTG0356A	NERDERLANDS	1
○	9-2		QQTG0354A	FRANCAIS	1
○	9-3		QQTG0353A	DEUTSCH	1
○	9		QQFGKN701GA	Operating instruction manual, EP XP XM	1
○	9-1		QQTG0352A	ENGLISH	1
○	9-2		QQTG0357A	ESPANOL	1
○	9		QQFGKN701HA	Operating instruction manual, MC	1
○	9-1		QQTG0352A	ENGLISH	1
○	9-2		QQTG0354A	FRANCAIS	1
○	9		QQFGKN701JA	Operating instruction manual, M	1
○	9		QQFGKN701KA	Operating instruction manual, X	1
○	9-1		QQTG0352A	ENGLISH	1
○	9-2		QQTG0357A	ESPANOL	1
○	9-3		QQTG0350A	中文	1
○	9		QQFGKN701LA	Operating instruction manual, XT	1
○	9		QQFGKN701MA	Operating instruction manual, XD	1
○	9-1		QQTG0352A	ENGLISH	1
○	9-2		QQTG0350A	中文	1
○	9		QQFGKN701NA	Operating instruction manual, EZ	1